

## BOOK TWO – PUBLIC COMMENTS

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# **PUBLIC COMMENTS**

**Hans G. Ehrbar**

I have been a participant in the Renewable Energy Initiative Group since the beginning. In my view, the present draft version of the report underestimates both the urgency for and the potential of renewable energy.

(1) Urgency: The main reason for switching to renewable energy, which overshadows everything else, is global warming. Fossil energy was a one-time windfall which turned out too good to be true. Even if renewable energy is more expensive than fossil energy, we must switch to renewables if we want to leave a hospitable planet to our children and grandchildren. The question is not whether renewable energy is cheaper than fossil energy; the question is how we can use the available economic resources most productively to make this switch, and how we can remove any regulatory, legal, and organizational obstacles which are the leftovers from a different time period. This is a common goal transcending the economic interests of which the participants are the representatives.

(2) Potential: The report underestimates the capabilities of renewable energy. In the long run, all our energy needs must be met from renewable energy, because we cannot rely on an exhaustible stock forever. But this long run future is closer than the draft report makes it appear:

(a) Renewable energy is not scarce. Solar energy is by far the most abundant and could solve all our energy needs. It is presently not the cheapest, but it is clean and can be harvested in a distributed fashion. But wind and geothermal energy are also widely available at prices almost competitive with coal or nuclear energy.

(b) The intermittency of renewable energy is a challenge but not a show stopper. First of all, not all renewable energy is intermittent: geothermal energy is one of the most reliable steady sources of energy. Secondly, different renewable energies have different time profiles which complement each other. Third, along with the technology of renewable energy generation also the technologies of energy storage are developing, from pumped hydro to vehicle-to-grid storage to hydrogen. Fourth, technologies are in development to adjust demand to the time profile of the supply. Facit: intermittency will become a problem only gradually, as the percentage of intermittent renewable resources increases. But over the same time frame we can expect many of the technological solutions to gain traction. One of the things necessary will be the strengthening and modernization of the electric grid. But this is an infrastructural measure which will pay for itself in other ways as well.

(c) Renewable energy is not an unproven technology. Wind, geothermal, concentrating solar, and PV solar have been in operation for many years. Renewable energy has shorter lead times than large centralized coal or nuclear plants.

(d) Renewable energy is not too expensive. The report states correctly that fossil energy already today may be more expensive than renewable energy, if one adds all the externalities. But even if those externality costs are not added to the electricity bills, they do not go away and someone has to bear them. The question is: do you want to invest in more hospitals for asthmatic children, or in renewable energy technologies.

(e) Renewable energy can be produced by many small businesses and does not favor large monopolies. It involves the population which is concerned about the environment in a democratic way.

(f) Due to the concentration of our discussion on electricity we were not able to list an additional benefit of renewable energy: its distributed and small scale low temperature technology is especially suitable for co-generation of electricity and heat, which gives additional savings. There are also synergies between the technologies for renewable energy and the technologies for energy savings (both need the smart grid). The report should mention that a broader perspective will strengthen the case of renewable energy.

Hans G. Ehrbar  
Associate Professor  
Economics Department  
University of Utah

Emery Energy



October 8th, 2007

RE: Comments on DRAFT REI Proposal

Dear REI Co-Chairs, Mr. Wessman and Mr. Wagner:

This letter is written to convey Emery's opinion and position on the definition of qualifying renewable energy resources and specifically on biomass resources. As per our participation in the REI committee meetings and as per our verbal recommendations during such meetings, we are expressing our position that **Municipal Solid Waste (MSW) should be included as a biomass feedstock that qualifies as renewable energy.** We recommend that the DRAFT REPORT be modified to reflect this change before being submitted to the Blue Ribbon Advisory Council.

If necessary, such language could read "the biomass fraction (i.e. plant or cellulosic material) of municipal solid waste"

It is illogical to include Landfill gas methane and to not include MSW. This approach only encourages ongoing landfilling and will result in incremental methane emissions from waste that off-gases over the life of the landfill before the new landfill cells become economical for energy recovery. Furthermore, if MSW is not included as a renewable resource, it will greatly limit the availability of economical sources of renewable and clean energy – reducing least cost alternatives for consumers.

To not include MSW as a renewable energy resource goes directly against the purpose of the Renewable Energy Initiative and broader goals of low carbon energy sources being championed by the Blue Ribbon Advisory Committee.

To not include MSW as an acceptable biomass feedstock is to ignore one of Utah's key renewable energy resources in a state that is otherwise limited or devoid of other renewable resources. Remember, most if not all, of the Blue Sky renewable energy comes from Wyoming based wind. The use of MSW within the state not only affords the opportunity for clean, baseload, dispatchable power (something wind and solar cannot provide), but can also create unique economic development opportunities (rural and

urban) within the State of Utah, that wind from Wyoming never will. One of the biggest constraints to a successful biomass energy portfolio is often the collection and delivery constraints of the biomass feedstock - and unlike other biomass resources (i.e. forest residue or agricultural residue), MSW has an existing collection infrastructure that contributes to its potential as a cost effective renewable energy resource.

Alternatively and if necessary, the REI Draft Report could include language similar to the California Energy Commission that reads “*MSW Facility must use a non combustion thermal process (i.e. gasification) to convert MSW to a clean burning fuel to generate electricity*”.

MSW can make a clean and lasting contribution to Utah’s renewable energy needs if it is deservedly included in the current draft report. We appreciate the opportunity to contribute to an appropriate policy framework related to biomass feedstocks.

Sincerely,

Ben Phillips, President  
159 Pierpont Avenue  
Salt Lake City, Utah – 84101  
Phone: 801-364-8283 / fax: 801-746-3256

**Dr. Philip C. Emmi**

Dear Mr. Campbell:

I offer a graduate course at the University of Utah this semester on Energy and the City. Students and I have been following the deliberations of the REI Focus Group and want now to submit the attached revisions to the REI Draft Report. We also submit the following statement for consideration as we are convinced that it presents initiatives that would be in the long-term interests of all parties concerned.

Whereas the REI Focus Group has advance a Renewable Portfolio Standard (RPS) for investor-owned utilities in Utah that is based on an Oregon case study, and

Whereas Utah is projected to grow at a rate that exceeds Oregon’s projected growth by 30 percent, and

Whereas projected energy production in Utah is expected to grow at a rate that exceeds RPS growth in renewable generation capacity with corresponding increases greenhouse gas emissions, and

Whereas the proposed RPS does not currently encourage demand-side management, dispersed-site production or improved plant efficiencies,

We request that the REI Results report to be modified to include the following three propositions:

- 1) That up to 30% of each year's RPS target may be met with any or all of the following:
  - a) Demonstrable results from demand-side management programs
  - b) Verified improvements in utility plant efficiency
  - c) On-site renewable energy installations in homes and small businesses
- 2) That the RPS targets be increased by 30 percent from 20% to 26% renewables by 2020
- 3) That, at a minimum, Renewable Portfolio Standards should change through time so as to guarantee a 26% reduction in greenhouse gas emissions by 2020 over current levels.

Sincerely,

Dr. Philip C. Emmi  
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### **Lakefront Gun, Fur and Reclamation Club**

#### **Focus Group**

This letter is a joint letter of the President and Board of Directors of the Lakefront Gun, Fir and Reclamation Club; and Bruce Waddell (club shareholder), retired USFWS Environmental Contaminants Biologist for Utah.

Our comments are in regard to the mandate as we understand it to develop a Renewable Portfolio Standard which would require specific fractions of Utah's electricity from renewable sources such as wind, solar, etc. We expect that this would provide a mandate for future planning using approximately the period of this investigation as the basis to compare these percentages against. and, that credits for meeting this RPS would be based on future changes in the way that electricity is produced compared to this basis.

We assume that a full range of alternatives for producing electricity from renewable sources is being considered. Of the ones we are aware of and that currently have the greatest likelihood of success in the near term, solar seems the most likely to be productive without a large number of negative impacts to our environment. We would be much more in support of solar incentives and encouragements designed to help homeowners and personal property owners offset the cost of their electricity by contributing to the grid, or provide a means of obtaining electricity where no source is economically available.

Wind appears to be the next most likely to provide a renewable source of energy. Of concern to us is the thorough review required of the proposed sites to identify the impacts likely to resident and migrating birds. Areas such as the Great Salt Lake are likely to be poor sites due to tremendous use of the area by nesting and migrating birds. This is complicated in that migrations of some of these occur at night when the slow moving props might still be hazards. Other potential hazards might include migrating corridors, e.g. hawks, falcons and eagles migrating along mountain ranges. In spite of this it seems to be being used successfully in other states and needs to be evaluated further to determine if the seemingly large potential actually exists.

We are not in favor of significant new expansion of hydro power on our smaller streams because of concerns they have already impacted fisheries and would likely further impact fisheries and riparian habitats. Further development of reservoirs on larger rivers is unlikely because of endangered fish use.

Bruce has conducted a limited investigation of solar power as a way of reducing electric costs by connecting to the power grid. At this time even with the existing incentives, he has not convinced himself that he could come close to break even with the investment. We suspect that there are a lot of individual users or even Duck Clubs that might be interested in solar electric power if enough technical and financial assistance were provided to offset the start-up costs.

Hope this assists you in prioritizing enhanced use of renewable resources.

Jason Kershaw, President. Lakefront Gun, Fur and Reclamation Club  
Bruce Waddell, Shareholder, Retired USFWS

**Patricia Willis, Teresa Griffiths, Vella Evans, Rachael Sloan, Jazmynn Pok<sup>1</sup>,  
Christineo Oravec, Yael Calhoun, Don Wilkerson, Richard Spotts, Amy Defresse,  
Mark Danenhauer**

REI Focus Group  
Blue Ribbon Advisory Council on Climate Change  
climatechange@utah.gov

Dear Members of the REI Focus Group,

As a resident of Utah who is concerned about the future of our citizens and wildlife, I applaud your work to develop renewable energy solutions for implementation in Utah. Non-renewable energy sources are no longer an option given climate change and our poor air quality here in Utah.

I understand that one proven way to facilitate more renewable energy development is with a Renewable Portfolio Standard (RPS). I am writing today to urge you to carefully consider how much hydropower will be included in your proposed RPS. While hydropower may be clean as far as the air is concerned, its development requires the construction of dams which pose a serious threat to native fisheries and associated ecosystems. By including unrestricted hydropower in your RPS, you would be encouraging energy providers across Utah to either build more hydro-electric dams, or rely too heavily on existing hydropower. The state of Utah needs a diverse energy portfolio in order to boost our economy and prepare for the future. We do not need more ecologically costly dams.

I encourage you to either eliminate hydropower from the RPS, or restrict its use like other states have done. I understand that Oregon has passed an RPS that will include hydropower only if it was built after 1995. I support a similar restriction that will promote a diverse portfolio, hearten Utah's economy, and eliminate the construction of more damaging dams for hydropower.

Please look hard at the future of our rivers! The public values this resource and trusts you to consider the threat posed by hydropower.

Sincerely,

Patricia Willis<sup>2</sup>

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<sup>1</sup>This comment was identical for those listed above, however an additional paragraph was included as the third paragraph for the comment submitted by this individual; it stated "The state of Utah prides itself on natural beauty and diversity. Endless activities are available for the residents and visitors to the state. I fear that allowing much use of the waters for power would limit this, and am positive that it would make it less enjoyable. Extra dams and development would be devastating to the natural beauty we are lucky to host here in Utah. Please don't do that to us."

<sup>2</sup>This comment was submitted individually by those listed above.



## **Richard Simon**

My work takes me across the USA and the world. We are seeing a "revolution" in green power across the planet. There are many causes of this: some a desire for cleaner energy, some to avoid dependence on foreign sources, and some strictly because they are cost-effective strategies to lead us through the 21st century.

Think of a blank map of the USA 30 years ago. Tiny little splotches of blue color could be dabbed on in the few places at that time where "renewable" energy was cost-effective--mostly remote communications towers where solar was cheaper than bringing in power lines.

During the past 10-15 years, these patches of blue have grown and continue to grow. In several states (e.g., Texas, Colorado) wind has proven more economic than conventional power--especially with the vacillating prices of natural gas.

Thus the "renewable" map is filling in across the United States. This is even with "subsidies" no greater than afforded the other energy technologies. Clearly as fossil fuels become more expensive and the political situation of the world seems to get more polarized, this map will continue to fill in.

So even on cost basis alone, 21st century thinking points us towards renewable energy technologies. And it is happening all around Utah: the Nevada, Oregon, California, Arizona, Colorado and Washington RPS's, widespread wind development ongoing in New Mexico, Colorado, Wyoming, and the coastal states.

Utah has decent wind resources (although obviously not as strong as Wyoming) and excellent solar resources. We are already poised for wind energy development even within the current difficult infrastructure and price challenges of the state.

Even if not the most economic now, it behooves Utah to consider the next 20 years. Renewable energy will become cheaper and in more demand. If given any kind of reasonable incentive, we will see development in Utah too. Consider renewable energy as part of a risk-management portfolio--how many more trapped coal miners, or the imposition of a carbon tax, will it take before conventional power becomes too expensive.

I personally cannot advise whether there should be an RPS, pure economic incentives, a mandate, or some combination. But something should definitely be put forth. It is also important that some (1/2 to 2/3) of the new guidelines are for native production in Utah--otherwise, we will see it pumped in from Wyoming.

Renewable energy helps greatly with property tax, with rural economic development, and many other bottom line attributes.

Finally, many wind turbine manufacturers are looking for places to set up factories. Utah is centrally located in the west, has a world-class airport, two major interstate highways, an educated and solid work force, and likes economic development. Just as there is currently a plan to bring in a solar manufacturer, a major wind company could happily set up shop in our state.

A renewable initiative will surely bring more dollars into Utah than whatever is "spent" via PTC, RPS, etc. Therefore, I strongly encourage support for a solid initiative.

Thank you,

Richard Simon, Director  
V-Bar, LLC  
201 E. South Temple, Suite 826  
Salt Lake City, UT 84111

#### **Salt Lake City Mayor's Office**



## ***Policy Recommendation: A Renewable Portfolio Standard for the State of Utah***

In the United States more than 85% of our electricity is generated by burning fossil fuels. In Utah that number jumps to an astonishing 97%. The process of producing electricity from fossil fuels—coal, oil, and natural gas—is negatively impacting human health and our environment. Many in Utah do not associate electricity use with air pollution and global warming. However, continued reliance on electricity from fossil fuels will result in persistent acid rain, smog, regional haze, and dangerous greenhouse gas pollution.

To move beyond electricity produced from fossil fuels at the speed necessary to significantly combat climate change and improve public health, Utah should act now by mandating renewable portfolio standard (RPS). Renewable portfolio standards have been extremely effective in significantly reducing greenhouse gas emissions and criteria air pollutants. Many states have also discovered that an RPS is of great benefit in meeting critical fuel diversity, energy security, and long-term economic goals, as well as stabilizing the price for energy production.

Twenty three states have already implemented an RPS and many more are exploring the opportunities that exist in adopting an aggressive standard. Utah is currently behind the curve in the Rocky Mountain region. New Mexico, Arizona, and Nevada have all adopted RPSs and Colorado is now seeking to expand its standard to at least 20% by the year 2020.

### **The adoption of an RPS can produce tremendous economic opportunities**

- In 1993, Nevada's geothermal power plants paid \$800,000 in county taxes and \$1.7 million in property taxes. In addition, the U.S. Bureau of Land Management collects nearly \$20 million each year in rent and royalties from geothermal plants producing power on federal lands in Nevada. Half of these revenues are returned to the state.(1)
- The renewables industry is growing. The global photovoltaic (PV) industry earned \$1.3 billion worldwide in 1997, with the U.S. PV industry collecting \$380 million. (2) The global wind industry sold approximately \$3.8 billion in equipment in 2001. In the United States, investors poured \$1 billion into wind energy projects in 2001.(3)
- The 240 MW of wind capacity installed in Iowa in 1998 and 1999 produced \$2 million per year in tax payments to counties and school districts and \$640,000 per year in direct lease payments to landowners.(4)
- The 143 wind turbines in the 107-MW Lake Benton I project in Minnesota, installed in early 1998, brought \$250 million in investment.
- Lake Benton's director of economic development notes that each 100 MW of wind development generates about \$1 million annually in property tax revenue.(4)
- Expanding Colorado's renewable energy standard to 20% by 2020 would create a net increase in total wages paid to energy workers in the state by a net cumulative total of \$570 million. (5)
- Expanding Colorado's renewable energy standard would increase Colorado's share of gross domestic product (GDP) by a net of \$1.9 billion through 2020. (5)
- According to the National Renewable Energy Laboratory, wind energy provides ten times more local tax revenue than a coal-fired power plant in Colorado on an energy-equivalent basis.

### **Creation of Jobs**

- Wind and PV offer 40% more jobs per dollar than coal.(3)
- Nevada's RPS (20% by 2020) is projected to create 8,092 installation, operation, and maintenance jobs over 10 years. If the entire manufacturing process is added to the installation and O&M employment, the total rises to 27,229 jobs over ten years.(6)
- Even with conservative assumptions for in-state manufacturing for wind farm components, wind power could provide Vermont with 70% more one-year jobs and more than three times as many permanent jobs as natural gas provides over a 20-year time frame. Wind power could also provide property tax payments to local governments distributed across a wider area of the state, conserve water that natural gas plants would otherwise consume, and pay significant royalties to farmers, ranchers, and other rural landowners.(7)

- In 1996, the U.S. geothermal energy industry provided about 12,300 direct domestic jobs, and an additional 27,700 indirect domestic jobs.(1)
- One megawatt (MW) of PV relies upon 69,650 hours of labor. This translates into approximately 36 person-years.(3)
- A 37.5-MW wind farm would create over 356,250 hours of work, or 180 person-years. Two thousand megawatts of wind power, as is expected in Texas shortly, will create 19 million hours of work, or 9,694 person-years.(3)

**States must set renewable portfolio standards to substantially decrease dangerous greenhouse gas emissions.**

- With current state RPS laws, it is projected that by 2017, carbon dioxide emissions (the gas most responsible for global warming) will be reduced by nearly 75 million metric tons—the equivalent of removing 11.1 million cars and planting trees in an area larger than West Virginia.(8)

Today less than 2% of Utah's electricity is generated from clean renewable sources. Adoption of an aggressive standard will allow Utah to continue to lead the western region in innovation, economic development and encourage a much needed market in renewable energy for the state. For these reasons the Salt Lake City Mayor's office implores the Governors Blue Ribbon Advisory Council on Climate Change to formally recommend the adoption of an RPS to phase in at no less than 20% by 2020, with the flexibility to ramp up that percentage as new and more efficient renewable energy technologies become available.

## **Sources:**

- (1) "Dollars from Sense: The Economic Benefits of Renewable Energy (DOE/GO-10097-261)." Washington, D.C.: National Renewable Energy Laboratory (NREL), September 1997. 28 September 2004 <<http://www.nrel.gov/docs/legosti/fy97/20505.pdf>>.
- (2) Assumes \$6.25 per installed Watt. Maycock, Paul. "U.S. firms shipped 60.8 MW of PV in 1999." *PV News* 19.3.
- (3) Five thousand megawatts (MW) of wind capacity is expected worldwide in 2001, with 1,300 MW in the United States. Total cost is assumed to be \$749,000 per MW. Singh, Virinder with BBC Research and Consulting and Jeffrey Fehrs. "The Work That Goes Into Renewable Energy (Research Report No. 13)." Washington, D.C.: Renewable Energy Policy Project (REPP), November 2001. 29 September 2004 <[http://www.repp.org/articles/static/1/binaries/LABOR\\_FINAL\\_REV.pdf](http://www.repp.org/articles/static/1/binaries/LABOR_FINAL_REV.pdf)>.
- (4) "Wind Energy and Economic Development: Building Sustainable Jobs and Communities." American Wind Energy Association (AWEA) Fact Sheet. 29 September 2004 <<http://www.awea.org/pubs/factsheets/EconDev.PDF>>. (5) *Energy for Colorado's Economy: Creating Jobs and Economic Growth with Renewable Energy* Colorado Research & Policy Center February 2007
- (6) "What's Energy?" Alliance to Save Energy. 29 September 2004 <[http://www.ase.org/uploaded\\_files/powersmart/whtsenrgy.html](http://www.ase.org/uploaded_files/powersmart/whtsenrgy.html)>.

(7) Sanders, Bernie, Independent Representative, Vermont. "Closing the Dirty Old Powerplant Loophole." Statement of Congressman Sanders on July 20, 2001. 29 September 2004 <[http://bernie.house.gov/statements/2001-08-27-clean\\_air\\_act-dirty\\_power\\_plants.asp](http://bernie.house.gov/statements/2001-08-27-clean_air_act-dirty_power_plants.asp)>.

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"The REPP Labor Calculator." Washington, D.C.: Renewable Energy Policy Project (REPP), July 2003. 29 September 2004 <[http://www.repp.org/articles/static/1/binaries/Labor\\_Calculator.pdf](http://www.repp.org/articles/static/1/binaries/Labor_Calculator.pdf)>.

Madsen, Travis, Stephanie Bonin, and Matt Baker. "Wind Energy: Powering Economic Development for Colorado." Denver, Colorado: Colorado Public Interest Research Foundation, November 2002. 29 September 2004 <[http://copirg.org/report/windenergy11\\_02.pdf](http://copirg.org/report/windenergy11_02.pdf)>.

### **Salt Lake County Mayor's Office**

To: Renewable Energy Initiative (REI) Focus Group  
c/o James Campbell  
Jacampbell@utah.gov

From: Salt Lake County Mayor Corroon

Re: Net Metering Issues for REI Focus Group

Dear Focus Group Members:

Salt Lake County is interested in diversifying the energy portfolio of the Salt Lake Valley, both internally for our government infrastructure and externally for our constituents. Given the committee's focus on "actions that could encourage the transmission and distribution system to be strengthened to support renewable resources," I am submitting this letter for your consideration to encourage amendments to Utah's Interconnection and Net Metering policies and procedures. In 2006, Salt Lake County installed its first solar photovoltaic (PV) system as a part of the Salt Palace Expansion project. Since that time, we continue to look for new opportunities to further promote environmentally and socially responsible energy resources.

In light of the upcoming REI report, I write to discuss two Salt Lake County renewable energy projects and the barriers currently impeding their successful implementation. First, Salt Lake County is interested in partnering with local financial institutions to install \$12 million worth of solar PV systems on our County facilities. Our initial

discussions have been promising. Local governments across the United States have successfully installed these types of systems using similar business plans.

The second project we are considering is a major Concentrating Solar Power (CSP) installation as part of the “Solar Salt Lake Project”, a partnership with Rocky Mountain Power, Utah Clean Energy, Kennecott Land, the State of Utah and Salt Lake City.

Although we are in the early stages for both of these projects, we have identified some significant barriers, in the context of net metering and interconnection, to the development of small-scale and large-scale distributed renewable energy. Please accept the following issues for consideration:

- 1) The current project size cap for net metered systems is 25 kW, which is relatively small compared to an average commercial load in Utah. If a commercial facility installs a solar PV (or other renewable energy) system larger than 25 kW, the process becomes significantly more challenging, time-consuming, and financially cumbersome. Our neighboring state, New Mexico, currently allows 80 Megawatts net metering.
- 2) Our efforts to obtain information on net metering and interconnection have been onerous and somewhat confusing, due to seemingly obscure program administration policies and procedures. The information on these matters is not readily available, transparent, or straightforward to the general public.
- 3) The current net metering rule payment structure is not favorable for commercial rate schedules, as the net metering rule only compensates for the kWh charge, not other charges, such as the “demand charge.” This does not accurately reflect the peak demand value of Utah’s solar resource and creates a significant disincentive for large-scale commercial projects. We would recommend that net metering compensate for the demand charge in addition to the normal kWh charge.

I appreciate that Rocky Mountain Power and Questar have already taken strides to allow for distributed renewable energy; however, we are eager to explore ways to eliminate unnecessary barriers to adoption and encourage increased development of renewable energy resources. We look forward to working with you on this process.

Regards,

Peter M. Corroon  
Mayor, Salt Lake County

## Andy Schoenberg

### Renewable Energy Initiative – Experience and Recommendations from residential customer with a grid-tied solar system

#### Background

**Our home has a 1400-watt, grid-tied solar photo-voltaic (PV) system**, including a battery bank, which has been operational since the summer of 2006. This system also has provision for connecting several solar powered commuter vehicles whose batteries can be charged from the home PV system as well as providing some PV power to the home when the vehicles are fully charged. (See Appendix) The experience gained in installing, getting permits and tax credits, dealing with Rocky Mountain Power and operating this system should be of value in considering initiatives which would promote renewable energy, and PV systems in particular.

**The system cost was \$7861 not counting labor** since I installed the system myself. **Federal and State tax credits reduced this cost by \$2000 and \$1903 respectively.** It should be noted that the State does not give credit for battery backup systems, which accounts for a slightly lower state tax credit. With these tax credits, the net equipment and supply costs for our solar system amounted to \$3958. **This month Rocky Mountain Power (RMP) announced its incentive program of \$2000 per kW of solar generated AC power. This would have reduced our hardware cost to \$1958.**

We do not have exact figures about how much energy our system generates. Review of our monthly statements from RMP, indicates that we have reduced our usage of energy by 6 kW hr per day or 180 kW hr per month. Our home solar system supplies approximately half of our power needs during the spring and fall when the furnace motor and the air conditioner are not running. **Assuming a value of \$0.10 per kW-hr for clean PV power (we pay that rate for the blue sky program) the annual savings is \$216 or 11% of the net “capital” cost of \$1958.** Thus a PV system installed this year would give a reasonable return on investment even if we discounted many other good reasons to install a PV system.

**Some of these other good reasons to go solar are enumerated here.** (1) If home solar systems become popular, the increased resale value of the home may recapture most of the investment. (2) **Home electric solar systems enhance independence and security.** This was illustrated last year when power in our neighborhood was interrupted for 2 days due to a severe windstorm. We were able to run our refrigerator, stove and several lights from our solar system and the energy stored in our battery bank. (3) There is great satisfaction in knowing that we are reducing the pollution and global warming associated with fossil fuel generated electricity. The esteem and satisfaction factor should not be discounted, given that people are willing to spend \$10,000 to \$50,000 to remodel their kitchens, bathrooms and bedrooms. (4) Since the energy from the sun is essentially free, the cost of an installed solar system will not escalate in contrast to the inevitable increased cost of electricity based on coal and gas fired power plants. (5) Our increased awareness and understanding of electric power and energy cost leads to many other efforts to reduce energy usage. (6) **Owning your own power generating system makes**

**each of us a stockholder in the electric “power grid”** and less dependent on “remote” owners to supply our essential needs for energy.

Given these great incentives and advantages to home solar electric systems why don't we have a massive demand for PV systems in Utah?

### **Obstacles and Needs for Wider Use of Grid-tied home PV systems.**

#### **1. Lack of PV Vendors and Installers**

Learning about solar power systems was a multi-year process for me as a home owner. The Internet, and “Home Power” magazine were the main sources. There are no real “stores” for grid-tied solar PV systems in Salt Lake City. The Solar Power Company (see Yellow Pages) is a one-man operation specializing in remote cabin solar installations. Although very helpful and knowledgeable, the owner is not licensed to install grid-tied solar systems and is often out of town installing cabin systems. The other vendors listed under “Solar Power” in the phone book typically are not there to answer your questions, and require that you leave a message.

I ordered the components of my system and installed them myself. I had a very difficult time finding a licensed electrical contractor willing or able to inspect my installation. Most major contractors turned me down saying they had no experience and did not know the NFPA codes for solar PV systems. The few that had experience were too busy to even come out to give me an estimate for changes that may be needed. Finally one of them suggested that I get the county inspector to come out and tell me what did not meet code or needed fixing. He came in a few days and to my surprise, approved the system without corrections. I had probably over designed my system with lots of circuit breakers at various junctions.

I believe that the lack of vendors, installers and people with knowledge of solar PV systems is the great barrier to more solar PV power in Utah.

#### **2. Cost issues**

**Our own experience of costs given the rebates and recent incentives contradicts the public's perception that PV systems are too expensive.** The federal, state and RMP incentives, rebates and or tax credits will likely reduce the cost of a residential system by more than 50%. Pending legislation in Congress will likely lift the cap of \$2000 tax credit, further increasing the advantage of renewable energy generation. The history of dramatic cost reductions in silicon based solar panels indicates that the current price of \$4 to \$5 per watt for solar panels will likely decrease by half in the next 5 to 10 years. I am submitting 9 copies of a book, “Exponential Solar”, (See [www.exponentialsolar.com](http://www.exponentialsolar.com)) which presents the evidence of how solar PV will transform the electric power generation system. It also includes the estimates of electric power needed for the future fleet of plug-in hybrid and EV vehicles.

#### **3. Regulations, Codes and Permit Issues and Approvals**

Getting a permit to install the system from the Salt Lake County involved providing a detailed electrical diagram of the system as well as a drawing of the house and placement of the solar panels on the property. A potentially serious obstacle for approval was the placement of the solar panel array at ground level, which in our case needed to be fairly close to the southern property line. There is some question whether a tilt-frame with



solar panels meets the definition of accessory building or structure and which set back regulations apply. The set back can be 1, 3, 10, 20 or 25 feet depending on interpretations of the regulation. After some debate with the regulators, who were helpful and reasonable, we managed to get approval for the placement of the solar panels. The permit for the electrical modification to our house was \$70.

One of our early solar arrays was placed on our garage roof. The current regulation of a maximum height of a non-attached garage of 16 feet is difficult to meet if the gable runs north to south and the array needs to face south at 45 degrees from horizontal. The code needs to be modified for roof-mounted solar systems, which may not be flush with the shingles. **Both the setback and the maximum height issue of solar panels needs to be clarified and harmonized statewide.**

After approval of the county inspector, we were able to apply for the State and Federal tax credit. This involved filling out considerable paperwork and providing receipts of the purchased items for the solar power system. This took a week or two of time and some clarification of cost items. **It may be noted that the cost of battery backup for the grid-tied system was not included in the State's tax credit. That provision of the law should be modified,** since the battery backup system supplies needed electricity when the grid is disabled due to natural disasters or other shutdowns of the grid.

#### **4. Net Metering and reimbursement Issues**

Rocky Mountain Power (RMP) required us to sign a contract for net metering which was mailed to us without much hassle. After signing the contract, the new LCD remote-sense net-metering power meter was installed by RMP without cost. This meter has two alternating readings with the first showing the kW-hrs supplied by RMP, the second the kW-hrs our solar system supplied to RMP. After a year the first meter failed. RMP installed a new meter within a few days and it has been functioning well since then. We discovered that the current regulations allow **RMP to pay us only \$0.043 per kW-hr if during any month we generate more energy than we use.** In most states the lower rate applies only if the net energy supplied to the power company during the whole year is greater than that supplied to the customer. **This net-metering regulation in Utah should be changed accordingly.** Furthermore, since PV power is clean power, is generated during highest load periods, and avoids the power losses associated with multiple transformers and long transmission lines, the power supplied by **PV solar systems should be reimbursed at a premium rate of up to \$0.15 per kW-hr.**

#### **5. Maintenance issues**

Our system has functioned reasonably well both in summer and winter. In the winter, snow removal after a storm is required to restore power generation. **For this reason we recommend that PV panels be installed where they can be easily cleaned.** Ground level installations are preferable. The capability of tilting the panels to horizontal in the summer and to a steep 50 degrees to the south in winter has helped with the efficiency and also the snow removal. The four panels that are installed on top of the garage are less efficient in the winter since mechanical snow removal is hazardous, and melting of the snow by the sun is slow especially during prolonged freezing temperatures. Our battery backup system requires periodic maintenance by adding distilled water to the batteries as needed.

## **Conclusions**

- 1. Residential Solar PV systems are very cost effective with the current and proposed rebates and tax credits. The cost is likely to decrease by more than 50% in the next 5 to 10 years. Generation of clean PV energy should be reimbursed at a premium rate of \$0.10 to \$0.15 per kW-hr.**
- 2. A great need as well as opportunity exist in the state to expand vendors and installers of grid-tied solar systems. Several “stores” with displays of solar power systems are needed in the Salt Lake Valley.**
- 3. Regulations should be clarified and harmonized statewide to simplify public and vendor education and promote adoption of residential PV installations.**

Submitted by: Andy Schoenberg, 801 274 7423, wfaut@comcast.net





JON M. HUNTSMAN, JR.

*Governor*

GARY R. HERBERT

*Lieutenant Governor*

# State of Utah

## Department of Commerce

# Committee of Consumer Services

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**MEMORANDUM**

To: Renewable Energy Initiative  
Ernie Wessmen, Chair  
Tim Wagner, Chair  
James Campbell, Utah Division of Air Quality  
Glade Sowards, Utah Division of Air Quality

From: Utah Division of Public Utilities  
Constance White, Director  
Energy Section  
Artie Powell, Manager  
Jamie Dalton, Utility Analyst II  
Brenda Salter, Utility Analyst II

Date: September 18, 2007

Ref: Comments from the Utah Division of Public Utilities (Division) regarding a Renewable Portfolio Standard (RPS) "strawman" proposal prepared for Utah Renewable Energy Initiative working group

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Attached are comments from the Utah Division of Public Utilities (Division) regarding a Renewable Portfolio Standard (RPS) "strawman" proposal prepared for Utah Renewable Energy Initiative (REI) focus group. The Division sincerely appreciates the hard work and support from the REI Chairs in effectively facilitating this process and for providing for an open forum to discuss ideas and concerns. We also extend our appreciation to James Campbell and Glade Sowards, REI staff, for their hard work and assistance, particularly in light of the group's tight time frames. We especially appreciate the opportunity to offer comments on the strawman proposal.

It is our desire to offer constructive suggestions to this proposal. The Division believes that an RPS is one tool that may be used to promote the development of renewable resources and

achieve the over-riding objective of reducing green house gases and improving air quality. It is our hope that these comments will help the group develop policies that will lead to the best possible solutions and outcomes for Utah's citizens.

Attachment:

## RENEWABLE PORTFOLIO STANDARDS

### DIVISION OF PUBLIC UTILITIES, COMMENTS

The following are comments from the Utah Division of Public Utilities (Division) regarding a Renewable Portfolio Standard (RPS) "strawman" proposal prepared for Utah Renewable Energy Initiative working group.

September 18, 2007

### INTRODUCTION

On August 22, 2007 a strawman proposal on renewable portfolio standards prepared by James Campbell and Glade Sowards was presented to the Utah Renewable Energy Initiative (REI) workgroup. Parties were asked to review the proposal and make comments. During meetings of the REI held on August 29 and September 5, the Division participated in the proposal discussions and made several comments and observations. At the end of the meeting on September 5, participants were invited to submit any additional comments or concerns in writing to the REI chairs, Tim Wagner and Ernie Wessman, and the support staff from the Department of Environmental Quality (DEQ), Mr. Campbell and Mr. Sowards. The Division respectfully submits the following in response to that request.

The Division supports the promotion and development of cost-effective<sup>1</sup> renewable resources for purposes of generating electric energy or power. The REI's charge is to study and recommend ways to promote the development of renewable resources within the State and region, presumably with the ultimate objective of reducing green-house gases and improving air quality. The Division offers the following comments in an attempt to help the REI group or others formulate recommendations to achieving an effective RPS.

The Division appreciates the work and support from the DEQ and especially its staff, in putting together an RPS proposal for discussion. The Division believes that an RPS is one tool that may be used to promote the development of renewable resources and achieve the over-riding objective of reducing green house gases and improving air quality.

As was explained in the REI meetings, the strawman proposal is, by design, closely modeled on Oregon's RPS legislation. In discussing the strawman proposal, it became apparent that many of the components of Oregon's RPS were designed in response to unique circumstances in the northwest and consistent with Oregon statute, and therefore, may not be applicable for a Utah RPS. For example, whereas Utah is highly dependent on fossil fuel to generate electricity, the northwest is highly dependent on large hydroelectric facilities. It

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<sup>1</sup> While cost-effectiveness and cost efficiency (least cost) are related, there are important distinctions. Cost-efficiency amounts to allocating resources strictly based on defined costs. In addition to defined costs, cost-effectiveness includes risks and uncertainties such as price volatility, load growth, and carbon legislation. Defined costs can include both internal and external costs associated with electric generation and transmission. For example, in PacifiCorp's IRP external costs for SO<sub>2</sub>, NO<sub>x</sub>, and H<sub>g</sub> (mercury) are included in the variable costs for each resource considered, and a cost adder for CO<sub>2</sub> (carbon dioxide) is used to represent the possibility of mandated green house gas reduction. PacifiCorp's IRP process and modeling are intended to balance costs and risks to achieve an optimal combination of supply (generation), demand (energy efficiency and DSM), and transmission resources.



appears that in part the intent of some elements of Oregon's RPS are designed to diversify away from large hydro facilities. The Division's comments will highlight this and other elements that it believes may not be applicable in designing a Utah RPS.

Other comments are consistent with the Division's statutory charge as outlined in UCA, §54. Briefly, this charge includes the promotion of the public interest, which includes the balancing of ratepayer, State, and utility interests. The Division believes that the promotion of cost-effective renewables can be consistent with this charge.

## STRAWMAN PROPOSAL: GENERAL OBSERVATIONS

The REI working group has been given a charge to develop public policy actions to increase the development of cost effective renewable electrical resources. In addition, the group was tasked with developing strategies to increase energy diversity in Utah, and improve the State's energy security.

The REI objectives generally appear to be in line with many of the goals that policy experts typically associate with an RPS policy. According to a report issued by the Pew Center on Global Climate Change, possible program goals include:

- Reduction of negative environmental impacts, e.g., reduced greenhouse gas emissions, or improved air quality;
- Promotion of economic development opportunities with the development and operation of renewable energy infrastructure;
- Enhancement of existing renewable energy facilities and expansion and diversification of a state's energy resources;
- Provision of a reliable base of energy resources to hedge against fluctuating energy prices;

- Promotion of growth in renewable energy technology to achieve lower costs and greater acceptance by the public.<sup>2</sup>

To achieve these goals, some policy experts argue that a properly structured RPS will contain, at a minimum, the following three basic design elements:

- To the extent possible, goals are met through market-based mechanisms;
- The state's quantity of renewable energy resources will be maintained and increased over an extended period of time; and
- Enforceable penalties will be exercised to ensure that goals will be met.<sup>3</sup>

Other potentially important design elements include:

- Development of targets or goals that are flexible and can adapt to changing conditions;
- Accounting for future uncertainty and accurately estimating program benefits and costs; and
- Identifying an accurate baseline from which outcomes can be measured.

These RPS design elements should be fully considered as specific program components are developed. The Division also believes that a successful RPS will contain clear definitions of the three main policy goals: "diversity," "security," and "cost-effectiveness."

With respect to the third measure noted above, cost-effectiveness, the Division points to a longstanding process under which that very issue is examined in the context of PacifiCorp's acquisition of generation resources, in an open, public, broadly vetted process. The Division provided the REI "Subgroup on Least Costs" a description of the Public Services Commission's

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<sup>2</sup> Rader, Nancy and Hempling, Scott, 2001. "The Renewables Portfolio Standard: A Practical Guide."

<sup>3</sup> Rabe, Barry, 2006. "Race to the Top: The Expanding role of U.S. State Renewable Portfolio Standards," pp. 6-7. Report Prepared for the Pew Center on Global Climate Change.

rules governing the Integrated Resource Plan (IRP) process for PacifiCorp.<sup>4</sup> These rules indicate that, “The process should result in the selection of the optimal set of resources given the expected combination of costs, risks, and uncertainty.”<sup>5</sup> Specifically, the Commission’s IRP rules defines least cost as achieving the lowest possible total utility and ratepayer costs considering (or balancing) the combination of costs, risks and uncertainty. Under current IRP practice, costs and uncertainty include internal costs of each resource, a limited range of external costs associated with some resources, and the potential for future carbon dioxide regulation. Among other factors, risks include gas price volatility. A working definition of cost-effectiveness, consistent with the IRP definition, may enhance an RPS design.

## STRAWMAN PROPOSAL: SPECIFIC COMMENTS

The Division provides specific comments on each of the strawman components. As the strawman proposal was presented to elicit comments and recommendations, it is our intention to provide constructive suggestions that are relevant to the circumstances found in Utah, informed by our experience with the IRP and other regulatory processes.

The Division has reviewed a number of documents, research papers, and other information on the topic of Renewable Portfolio Standards. In making our comments, our intention is to base many of our suggestions on this research and provide the REI chairs with some relevant “pros and cons” that other states have experienced so far. The Division believes this information may be helpful in developing a potential RPS recommendation. Consequently, our comments are quite lengthy.

The discussion below is formatted to highlight general points about each issue area, taken from the draft REI report and shown in italics, and then provide detailed comments and suggestions on each point.

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<sup>4</sup> The IRP is mandated by the Utah Public Service Commission (PSC), and is the product of a planning process that culminates in recommendations about future actions that PacifiCorp should take to provide reliable, least-cost service while reasonably managing risks (prices, service reliability, etc.) to customers.

<sup>5</sup> Utah Public Service Commission, Report and Order, Docket No. 90-2035-01, p. 18.

## PROPOSAL COMPONENT

### a) **Target:**

<i>Investor Owned Utility (IOUs):</i>	<i>20% by 2020</i>
<i>Municipalities:</i>	<i>5-10% by 2020</i>
<i>Rural Electric Co-ops:</i>	<i>5-10% by 2020</i>

*Targets for Municipalities and Co-ops that currently have a surplus in energy will not be applicable unless new resources are acquired.*

*Annexing of IOU service territory by Municipalities or Co-ops without consent, will trigger full (IOU) RPS targets.*

## DIVISION COMMENTS:

- Targets, because of the interdependency of several components of the proposal, would be best specified only after other details of an RPS are determined.
- The more aggressive the targets, the greater the need for supporting complimentary elements such as “renewable energy zones” and tax or other incentives.
- Targets should be flexible to enable adaptation to changing conditions.

### *Target Specification*

The Division believes that additional data and information would produce a more informed decision about the goals or targets. For example, a more in-depth evaluation of the mix of renewable resources that is feasible and available within the state and region should be conducted before a final determination of targets is set. Likewise, any discussion of targets would be more meaningful, and setting targets likely would be more successful, if other questions and suggestions, outlined below, regarding resource selection, eligibility, implementation of RECs, REC trading, and other relevant program components, were more fully addressed first.

Until targets are more clearly defined, it is virtually impossible to determine the cost impacts on customer classes, identify benefits from policy implementation, or determine how the policy mitigates risks relating to health, energy availability, price stability, etc. This information is crucial and better articulating it before the proposal is considered in the larger public arena likely would make for more informed debate and better policy choices.

As noted above, the REI proposal calls for selection of cost-effective renewable resources that provide for diversification and energy security. The Division believes that the best process would be to first define and articulate explicit goals and objectives for energy diversity and energy security, which in turn would inform the direction needed to achieve the selected targets. There is also a need to determine how the cost-effectiveness criterion will factor into the quantity of resources needed to achieve diversity and security. For example, a renewable resource may be selected to help diversify the portfolio, but it may not be the most cost-effective renewable energy source. What type of program criteria would be provided to justify selection of the more expensive resource? Consideration should be given to whether the PSC has the authority under current law to set rates that are not “least cost,” as presently defined in the regulatory arena. For example, the IRP guidelines state that if two resource portfolios have a comparable valuation of expected cost and risk, the portfolio that results in the lowest net present value of the associated revenue requirement will be favored.

Regarding the goal of diversity, policy experts recommend that an RPS aimed at diversifying the base of renewable energy resources should broadly define the list of eligible resources. The only caveat to this is in the case where a state is already being served by a predominant source of existing renewable power. If one of the RPS strategies is to rely on market solutions to bring new resources to bear, policy experts recommend that least-cost alternatives should be a primary factor in determining resource eligibility. With a market-based RPS, least-cost resources will likely be favored. Consequently, policy makers should consider the extent to which the market should be allowed to determine eligible technologies and resources. Some argue that a separate eligibility category may be considered for technologies and resources that may not be cost-effective now, but have promising characteristics that may make them more viable in the future.<sup>6</sup> However, policies that promote a less economically viable renewable technology on the basis of portfolio diversity carry the short-term risks of reduced generation or customer uptake from other, more efficient, renewable resources. Again, questions such as these cannot be resolved until objectives for energy diversity are explicitly spelled out.

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<sup>6</sup> Rader and Hempling, p. 16.

With respect to the REI's goal to achieve energy security, it is assumed that the objectives would be the achievement of price stability and reliability of service. Again, once a more robust discussion about overall program goals and related issues is completed, specific targets for this issue could also be defined explicitly.

Finally, with respect to setting RPS targets, fairness and program consistency appear to be essential elements to a successful RPS. Accordingly, some experts argue that obligations should be placed equally on all retail electricity sellers, power producers and developers. According to Hamrin, et al., "All those who benefit from the increases in renewable supply should share in the costs and customers cannot avoid those costs by changing suppliers, as well as costs of helping establish a more predictable and stable market for development of new generation."<sup>7</sup> The Division recommends that any RPS proposal be designed to be consistent with this recommendation. It should be noted that under current law, entities such as municipal power producers, electrical co-ops, and merchant power suppliers may not be bound by RPS mandates, or may not fall under the jurisdiction of the PSC. Thus, attention needs to be paid to how parties will participate, and how compliance will be measured. Again, depending on how rules are defined, the DEQ may be the best agency for overall governance of an RPS, with the Division providing support with respect to the regulation of entities that currently fall under its purview.

#### *Complementary Elements: Program Incentives*

If RPS targets are aggressive and market-based, likely there will be a greater need for incentives such as "renewable energy zones," tax credits, or other incentives. The Division believes that the discussion on incentives held in the September 5 REI meeting was useful. (The Division previously made contributions in this area with its analysis on potential barriers to participation in Utah's Net Metering program.<sup>8</sup> More in-depth evaluation of the impacts of

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<sup>7</sup> Hamrin, Jan, Leiberman, Dan, and Wingate, Meredith, 2006. "Regulators Handbook on Renewable Energy Programs and Tariffs," pp. 34-36.

<sup>8</sup> Refer to the Division's February 2007 Report: "Utah's Net Metering Program, Best Practices, Program Barriers, and Recommendations"

specific incentive programs should likewise be pursued. Again, clarifying definitions relating to targets will be useful in designing specific incentive strategies. The Division recommends that this evaluation also include renewable energy zone proposals which were raised by the REI.

*Targets or goals should be flexible*

The Division believes that rigid standards carry greater economic risk where the future is uncertain. A policy that cannot be adapted to changing conditions can lead to significant unintended consequences. A report prepared by the AEI-Brookings Institute on California's emission standards is instructive. Regarding the consequences of inflexible emission reduction standards, the researchers noted: "In the presence of cost uncertainty, rigid adherence to particular standards or emission targets increases the risk that policies will cause undesirable economic consequences. An inflexible cap on NO<sub>x</sub> emissions established under California's RECLAIM program led to a dramatic increase in program costs in 2000..."<sup>9</sup> The AEI-Brookings report claims that a more flexible cap would have helped mitigate rapidly escalating energy costs that were occurring during that period of time.

The REI effort should carefully consider methods to mitigate future cost uncertainty before implementing specific standards. The failure of policymakers to adequately account for cost uncertainty can lead to significant over- or under- estimation of program costs. With respect to developing an RPS, it is important that the potential areas of uncertainty – future fuel prices, technological advances, economic growth – be considered. Both an RPS and any strategies to mitigate uncertainty should be capable of adapting quickly to changing conditions. To the extent possible, program objectives should be consistent with market-based strategies, as such solutions may provide more flexibility to achieve renewable energy goals across various sectors, particularly in times of escalating costs.

## PROPOSAL COMPONENT

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<sup>9</sup> Stavins, Robert, Jaffe, Judson, and Schatzki, Todd, 2007. "Too Good to Be True? An Examination of Three Economic Assessments of California Climate Change Policy," p. 33.

**b) Definitions of “Renewable”**

*biomass energy; hydroelectric energy (needs to be qualified); geothermal energy; solar energy; wind energy.*

*- biomass energy" means any of the following that is used as the primary source of energy to produce fuel or electricity:*

*(i) material from a plant or tree; or*

*(ii) other organic matter that is available on a renewable basis, including:*

*(A) slash and brush from forests and woodlands;*

*(B) animal waste;*

*(C) methane produced:*

*(I) at landfills; or*

*(II) as a byproduct of the treatment of wastewater residuals;*

*(D) aquatic plants; and*

*(E) agricultural products.*

*(b) "Biomass energy" does not include:*

*(i) black liquor;*

*(ii) treated woods; or*

*(iii) biomass from municipal solid waste other than methane produced:*

*(A) at landfills; or*

*(B) as a byproduct of the treatment of wastewater residuals.*

*- Other resources as determined by the state wide governing body (PSC, DEQ?).*

**DIVISION COMMENTS:**

- With renewable power currently accounting for a small proportion of Utah’s domestic electric power production, a broad-based definition of renewable power may be warranted.
- Broadly-defined resource eligibility criteria are also needed to ensure that program targets can be met in a cost-effective manner.



*Broadly define renewable resources*

The definition of renewable resources, as listed in the strawman proposal, appears to be consistent with current state code.<sup>10</sup> Other states' RPS policies include low-impact hydroelectric power. There is some question if Utah's hydroelectric energy resources should be included. From one perspective, these resources, particularly investor-owned, municipal or cooperative hydroelectric power, appear to be small, carry low environmental impacts, and account for an insignificant share of the state's generation resource mix (see comments on "Existing Facilities" below). On the other hand, out-of-state hydroelectric resources supplied to the Utah may not have these same qualitative characteristics. As Utah is included in the service area of a six state regional investor-owned utility (IOU), restrictions on the interstate trade of hydroelectric power may be problematic. (More on this issue appears below). Finally, as mentioned earlier, careful consideration should be given to determining which state agency should have oversight and approval authority in determining those renewable resources that may comply with RPS requirements.

*Broadly define eligibility criteria*

In defining what resources should be "eligible", there are a number of concerns. An effective policy would be broad-based, and would rely on a combination of in-state renewable resources, Renewable Energy Credits (RECs), and other resources to most efficiently achieve program targets. The Division recommends that the policymakers be wary of adopting restrictive policies that attempt to limit eligibility to resources generated within the state, limit eligibility to resources that sell to in-state customers, or restrict eligibility to producers that provide in-state benefits.

The reason to be cautious about over-restrictive policies or definitions is that such measures may not be feasible or legal. First, it is difficult – perhaps impossible -to track the physical flow of generated electricity, or confine economic or technological benefits to a political boundary. Given such problems, researchers note that it is difficult to predict whether restrictions

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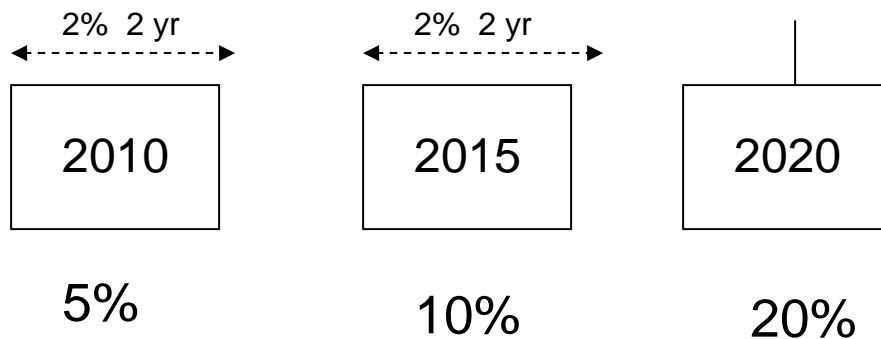
<sup>10</sup> See UCA, §59-12-102 (11, 74, and 75).

based on in-state benefits will actually benefit the enacting state.<sup>11</sup> Second, limiting the benefits of renewable generation to a specific state may inhibit resource diversity and reliability, stifle competition among renewable producers, inhibit other market-based options such as REC trading, and impede price stability. Finally, there may be significant potential legal problems associated with policies that attempt to limit benefits to a defined area. Rader and Hempling note that “Location requirements raise questions of constitutionality under the Commerce Clause of the U.S. Constitution.”<sup>12</sup> Likewise, in-state consumption requirements may be fraught with similar risks (in addition to the practical difficulty of tracking electron flow from generator to consumer).

#### PROPOSAL COMPONENT

##### c) **Compliance**

*Beginning in calendar year 2010 IOU's have the following milestones:*



*There would be a 2% 2 yr window for 2010 and 2015 milestones to prevent artificial markets; however 2020 is a hard deadline.*

#### DIVISION COMMENTS:

- Compliance policies should be predictable, provide stability for investors, and encourage self-sustaining markets.
- Compliance criteria should be flexible to meet unexpected future events.
- Consider linking targets to an entity's output occurring in a previous year.

<sup>11</sup> Rader and Hempling, p. 33.

<sup>12</sup> Rader and Hempling, p. 35.

As noted previously, flexibility should be a key factor in measuring compliance. Given the inherent difficulties in accurately predicting costs of achieving the goals set in RPS policies, some experts in this field recommend that RPS requirement should be ramped up predictably using a fixed schedule.<sup>13</sup> The REI proposal appears to be generally consistent with this approach. Many RPS experts argue that gradual increases in RPS purchase obligations will encourage continued investment in renewable resource generation facilities and will lead to greater renewable market stability. Allowing adequate time for final obligations can encourage the use of long-term contracts which reduces the risks of financing and developing renewable generation capacity.<sup>14</sup> RPS experts claim that this will provide for steady increases in market growth with accompanying enhancements in renewable technology, industry development, reductions in costs, and avoidance of “boom and bust” cycles in renewable development.<sup>15</sup>

The “Regulator’s Handbook on Renewable Energy Programs and Tariffs” recommends that an RPS be designed with flexible criteria to meet unexpected future events such as potential supply constraints or changes in market demand. Such unforeseen events can make overly proscriptive RPS obligations unrealistic.<sup>16</sup> For example, goals or targets may need to be adjusted as there are unforeseen additions of renewable resources or if inconsistent federal RPS policies are mandated. Further increases toward the ultimate goal would be contingent on the program’s ability to meet annual or periodic targets within reasonable program cost estimates.

In keeping with this approach, the REI may want to consider an incremental policy that provides for a “pilot period” before final hard targets or percentages are codified. The program would be implemented and then reviewed after a given period of time to assess performance in meeting objectives, impacts of cost, and so forth. Here, a targeted “trial” approach may be prudent to better determine program strengths and weaknesses.

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<sup>13</sup>Rader and Hempling, p. 11.

<sup>14</sup>Hamrin, et al., p.36.

<sup>15</sup> Ibid.

<sup>16</sup>Hamrin, et al., p. 34.

The REI may also want to consider linking required targets to a participating entity's power production in a previous period. For example, a participant's renewable production target for 2020 would not be required to be met until 2021 or 2022. This effective lead-time will allow a participant enough time to plan and competitively procure or develop the required resources. This would allow each participant more flexibility to react to market conditions and minimize costs as they secure the required amount of resources.

#### PROPOSAL COMPONENT

**d) Renewable Energy Certificates**

*Compliance of the RPS requires proof of the qualifying electricity. This proof is in the form of a Renewable Energy Certificate (REC). Electric utilities can use both bundled and unbundled RECs within the Western Electricity Coordinating Council (WECC).*

*The Electricity associated with a bundled REC must also be delivered to the utility. However, the associated renewable electricity can be "swapped out" for non-qualifying electricity (e.g., from natural gas or coal) as it makes its way to the final destination. This allowed for non-qualifying electricity to "shape" or "firm" wind power and other intermittent power resources.*

*For IOU's, no more than 20 percent of their compliance in a given year may be met through the use of unbundled RECs. For the Municipalities and Co-ops, no more than 50 percent of their compliance in a given year may be met through the use of unbundled RECs.*

#### DIVISION COMMENTS:

- A broad-based use of RECs in an RPS policy may be essential to achieve flexibility and lower costs
- An RPS should include both bundled and unbundled RECs
- More analysis is needed before setting caps on the use of RECs.

The Division agrees with experts who argue that a broad-based use of RECs in an RPS policy may be essential to maintain flexibility and lower compliance costs.<sup>17</sup> Indeed, as Utah’s domestic base of renewable electric resources (including hydroelectric resources) currently comprise less than 2 percent (see comments on “Existing Resources” below) of all electricity generated within the state, RECs will be a necessary short-term component of an RPS policy.

Experts argue that the use of RECs or tradable credits improves overall efficiency as retailers are free to purchase renewable resources competitively. They also note that a broad-based REC policy will help promote competition among renewable energy projects and will provide more flexibility in meeting program objectives.<sup>18</sup>

On the negative side, reliance on RECs to support an RPS policy may lead to unexpected cost impacts. In Massachusetts for example, a lack of long-term contracts for new renewable development, along with siting and permitting difficulties, has led to an increased demand for RECs to meet RPS compliance standards. As a consequence, rates are higher than originally anticipated.<sup>19</sup>

The Division believes that including tradable energy credits as eligible resources will facilitate portfolio diversification, particularly since Utah’s in-state renewable resources are in short supply. Again, the Division would recommend that the approach be broad-based, and that it allow both bundled and unbundled RECs. A restrictive REC policy likely will mean that fewer renewable resources will be available. This will make it more difficult to achieve program goals and to minimize program costs.<sup>20</sup>

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<sup>17</sup> Chen, Wiser, and Bolinger, “Weighing the Costs and Benefits of State Renewables Portfolio Standards: A Comparative Analysis of State-Level Policy Impact Projections,” p.1.

<sup>18</sup> Rader and Hempling, p. 3.

<sup>19</sup> Rabe, pp. 14-15.

<sup>20</sup> Note that some experts argue that out of state RECs should be bundled with energy to better capture price stability benefits in renewables (see Hamrin, et al, p. 35).

The strawman proposal recommends a cap on the use of RECs to meet compliance standards. However, the Division recommends that further analysis on the pros and cons of implementing a REC cap is needed before such a policy is included. In general, a restrictive REC policy could result in fewer eligible renewable resources, thus endangering program goals and increasing costs.

#### PROPOSAL COMPONENT

***e) Issuance of Certificates***

*A statewide governing body will issue RECs and the tracking will be done by WREGIS.*

DIVISION COMMENTS: (NONE AT THIS TIME)

#### PROPOSAL COMPONENT

***f) Existing Facilities***

*An existing facility is defined as those that became operational before January 1, 1995.*

#### DIVISION COMMENTS

- Given Utah's proportionately small output of renewable electric resources, exclusion of existing facilities may make it more difficult to achieve program goals.

The Division is concerned that a "vintage date" that excludes existing facilities will only make it more difficult and costly to achieve program goals. The most recent information provided by the State Energy Program shows that Utah's net generation of electrical power by (potential) renewable resources is a small fraction of all net power generated in the state (see Table 1 below).

**Table 1: Electric Power Sector Net Generation by Energy Source, 2004 - 2006**  
(MWh)<sup>21</sup>

Year	Fossil Fuel			Renewable*			Total	Renewable/Percent of Total
	Coal	Natural Gas	Petroleum	Hydro**	Geothermal	MSW/Land-fill Gas		
2004	36,617,854	909,850	32,567	449,848	194,876	6,982	38,211,977	1.7%
2005	36,026,201	964,998	40,245	784,463	n/a	n/a	37,815,907	2.1%
2006	37,017,364	3,214,427	33,871	n/a	n/a	n/a	40,265,662	n/a

\*Includes Hydro

\*\*Includes Power from Federal Resources (Flaming Gorge, Deer Creek; 245,323 MWh in '04; 404,984 MWh in '05)

Even with hydropower included in the renewable resource mix, current in-state renewable production accounts for less than 2 percent of all electric power produced in-state.

Policy experts point out several reasons to support arguments that RPS policies should exclude existing renewable facilities. According to Rader and Hempling, it may “make economic sense to exclude existing resources if [they don’t] require support to operate profitably over the long term.”<sup>22</sup> Others argue that where one renewable resource already dominates a state’s renewable energy portfolio, other resources may need to be included to promote diversity goals.

However, in Utah’s case, such reasoning may not be helpful. Excluding an older existing facility, for example the Blundell geothermal plant, would result in a significant loss to the base of renewable power produced within the state. Similarly, as all existing renewable electricity resources that might be included in an RPS are insignificant in proportion to the total net generation of electric power produced within Utah, the Division believes that a careful analysis of existing facilities should be conducted before any exclusionary policies are finalized.

## PROPOSAL COMPONENT

<sup>21</sup>Utah Geological Survey, State Energy Program, “Utah Energy and Mineral Statistics, Chapter 5: Electricity.” <http://geology.utah.gov/sep/energydata/electricitydata.htm>

<sup>22</sup> Rader and Hempling, p. 19.

**g) Renewable Energy Certificate Trading**

*Electric utilities can use both bundled and unbundled RECs within the Western Electricity Coordinating Council (WECC). RECs may only be used once and only by the owner of the REC.*

**DIVISION COMMENTS**

- Issues regarding REC ownership and transfers should be addressed.
- There may be undesirable impacts if other REC-based programs are not integrated into the RPS.

The Division agrees with the need for a broad-based REC trading policy where electric utilities can use both bundled and unbundled certificates. However, the Division advocates a thorough discussion to clarify important issues such as: who owns the credit, how credits are transferred or retired, and how to handle competing demand for credits when RECs are used for other non-RPS policies or programs.

There are various REC trading strategies that should be evaluated. For example, some experts advocate a REC “re-bundling” strategy. Here, RECs may originally be bundled with energy under a given transaction. However, the REC purchaser may not exercise the REC, and may rather hold it as a “banked” credit. Ultimately, this purchaser may re-bundle the REC and sell it with a given quantity of produced energy. Of course, there may be concerns about what type of energy the REC is bundled with, but such strategies probably warrant examination.

The Division believes that there will be market distortions if current voluntary REC-based programs such as Blue Sky power are not integrated into an RPS policy. Failure to include such programs into an RPS may have unintended consequences on the ratemaking process, or may have significant impacts on participation within the voluntary programs.



As noted above, given the current lack of in-state renewable electrical resources, a narrowly defined REC trading policy with strict geographical limitations may make it more difficult to achieve program objectives and keep cost impacts at a minimum.

#### PROPOSAL COMPONENT

***h) Recovery of Costs***

*All prudently incurred costs associated with complying with the RPS are recoverable.*

#### DIVISION COMMENTS

Consistent with current policy, the Division believes that a utility should be able to recover costs in the reasonable and prudent provision of electrical service. Nevertheless, this does not imply that cost recovery under an RPS will be without controversy. For example, there are concerns that volumetric-based allocation of program costs may unduly burden industrial and large commercial customers. Allocation of program costs may be a significant issue within the ratemaking process. A better understanding of potential program costs and impacts would be useful before making recommendations.

#### PROPOSAL COMPONENT

***i) Cost Caps***

*Utilities are not required to comply with the RPS to the extent that the sum of the incremental costs of compliance with the RPS, the costs of the unbundled RECs, and the alternative compliance payments made exceed four percent of a utility's annual revenue requirement in a compliance year. RPS compliance costs are not included in the annual revenue requirement to prevent a compounding effect.*

#### DIVISION COMMENTS

- Cost caps should be included in the RPS proposal, but before adopting specific measures, any proposals should undergo sufficient analysis and discussion.

The Division agrees with the need to design a cap on costs. One way to do this might be to make graduated increases in a goal contingent upon the program's ability to stay within specified cost parameters.

The Division believes that more discussion and analysis needs to be conducted in order to more fully understand how to design a cap, rather than simply arbitrarily adopting designs from other states' RPS. For example, policy experts Rader and Hempling recommend target ranges that include establishing a maximum acceptable cost of the required renewables, indexing the average above-market wholesale renewable power cost to an acceptable wholesale generic power price indicator, or establishing an acceptable ratio between above-market renewables costs and average consumer bills.<sup>23</sup>

As mentioned above, there are unresolved questions about rate recovery and RPS- induced cost allocation among customers who consume large quantities of electricity. The Division acknowledges the implied concerns on such consumers and recommends that further study or comment be provided to determine if these consumers may incur excessive cost burdens under the current class allocation design.

Again, the Division believes that maintaining flexibility in implementing cost caps will lead to a better RPS for Utah. One possible approach would be to reduce the size of the goal if costs exceed an established level.

#### PROPOSAL COMPONENT

***j) Alternative Compliance Payments***

*In lieu of procuring renewable energy resources, utilities can pay an Alternative Compliance Payment (ACP), to be placed in a fund that can only be used for acquiring renewable energy resources in the future, or for energy efficiency and conservation programs. Rates for each utility will be established on a per megawatt-hour (MWh) basis by the Utah Public Service Commission (PSC). This mechanism sets an effective cap on the cost of complying with the RPS.*

#### DIVISION COMMENTS:

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<sup>23</sup> Rader and Hempling, p. 8.

While the Division acknowledges that ACPs appear to be a reasonable mechanism to facilitate achievement of program goals, there is some concern that an ACP may lead to an artificial upper bound on renewable development or RECs. Further analysis is needed to assess the pros and cons of such policies, if implemented.

#### PROPOSAL COMPONENT

***k) Green Power Programs for All Utilities***

*Every utility in Utah must offer their customers the option of voluntarily purchasing renewable energy. These purchases will not count toward an RPS.*

#### DIVISION COMMENTS:

- It is possible that excluding voluntary green power programs will lead to increases in REC prices, lower green power program participation, and will impact the cost recovery process.

As indicated above, the Division is concerned that the exclusion of green power programs such as Rocky Mountain Power's Blue Sky program from a potential RPS requirement may have unintended consequences. The Division believes that voluntary REC-based programs such as Blue Sky power will be forced to compete with the RPS in the purchase of RECs or other renewable resources. As a result, prices for the Blue Sky program may be higher than they otherwise would have been and may affect customer participation. Moreover, as Blue Sky rates are tariff-based, the utility may be held accountable for ensuring the most cost-effective purchase of RECs when cost recovery determinations are made during the ratemaking process.

#### PROPOSAL COMPONENT

***l) Misc***

*By Oct 1, 2008, the state must establish an automatic adjustment clause method that allows timely recovery of costs prudently incurred by an electric company to construct or otherwise acquire facilities that generate electricity from renewable energy sources and for associated electricity transmission.*

*Utilities and Independent Generators must submit annual compliance reports to the PSC or governing state-wide body.*

## DIVISION COMMENTS:

The Division believes that as this issue would primarily affect investor-owned utilities, it would best be determined in a general rate case setting under the auspices of the PSC. It is recommended that if an RPS is proposed, the draft language should state that issues such as these should be determined in a ratemaking arena.

## ADDITIONAL DIVISION COMMENTS AND RECOMMENDATIONS

### Penalties

While the topic of penalties may actually fit in the compliance or the alternative compliance sections (sections c and j), the Division nevertheless offers the following information regarding the topic here. Policy experts argue that a RPS policy should clearly articulate enforcement policies and associated penalties. If there is no clear signal that failure to comply will result in enforcement actions, RPS targets will likely be ignored.<sup>24</sup>

It is recommended that penalties should constitute an environment in which compliance results in the least-cost outcome for obligated entities.<sup>25</sup> A variety of penalties can be adopted using either a capacity or energy-based scheme. Many RPS policies designate the state's Public Utilities Commission as the impartial regulatory body to enforce the policy.

### *Measurement Criteria: Energy vs. Capacity*

The REI briefly discussed the issue that RPS policies typically measure the required renewable energy obligation in one of two ways. The first method measures the energy produced, as measured in megawatt hours. A second method looks at the capacity or potential renewable power output that can be produced, as measured in megawatts.

Most policies use the energy-based standard, due to the relative ease of its application to either generators or retailers. This standard typically is set as a percentage of retail sales or is

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<sup>24</sup> Hamrin et al., p.36.

<sup>25</sup> Ibid.

applied as a percentage of total electricity generated. One advantage of this approach is that environmental benefits occur as the renewable energy generated replaces nonrenewable energy production. The down-side of an energy-based standard is that it requires continuous tracking and verification of generation to prove compliance. Experts note that generation information systems and RECs can provide a means for regulators to monitor energy production by source, date, or through transactions or tax incentive information.

A capacity-based standard is usually a more simple approach, as it is merely a measure of the required increase in renewable generation capacity over a specified compliance period. Actual implementation of the measure is a bit more difficult, as the actual amount of renewable capacity obligation for each individual participant must be calculated from the entity's market share using the previous year's sales. Of greater concern with a capacity-based standard is the fact that it is "static" and there may be little incentive for a participating entity to optimize investments in facility operation or maintenance, to plan for potential times of curtailed output, or to even operate the facility.<sup>26</sup>

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<sup>26</sup> Hamrin, et al., pp. 33-34.

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**Utah Renewable Energy Initiative**  
**Comments of SunEdison, LLC**  
**September 11, 2007**

**Introduction**

SunEdison, LLC appreciates the opportunity to present its thoughts about the Renewable Portfolio Standard Strawman, and apologize for being unable to participate in previous meetings. SunEdison is North America's largest solar energy services provider, providing solar-generated energy to a diverse client base of commercial, municipal and utility customers. We have offices in California, Colorado, Hawaii, New Jersey and Maryland. We finance, install, own, operate and maintain photovoltaic (PV) power plants at customers' facilities. Our customers pay only for solar electricity, not solar equipment. Our investors include Goldman Sachs, Missionpoint Capital Partners, and the Allco Finance Group. We have national accounts with companies that include Kohls, Walgreens, Staples, Whole Foods and Walmart, and are building centralized PV powerplants for utilities including an 8.2 MW solar facility that has already created 78 new jobs in Colorado. Moreover, this plant will be built from groundbreaking to in-service in 8 months.

Given the renewable resource base in Utah, a Renewable Portfolio Standard (RPS) that is consistent with other standards in the West can provide economic development, energy security, and environmental benefits. In addition, renewable energy provides a hedge against future fossil fuel price increases. Utah has some of the best solar resources in the country, and these resources should be captured in the most cost-effective way possible.

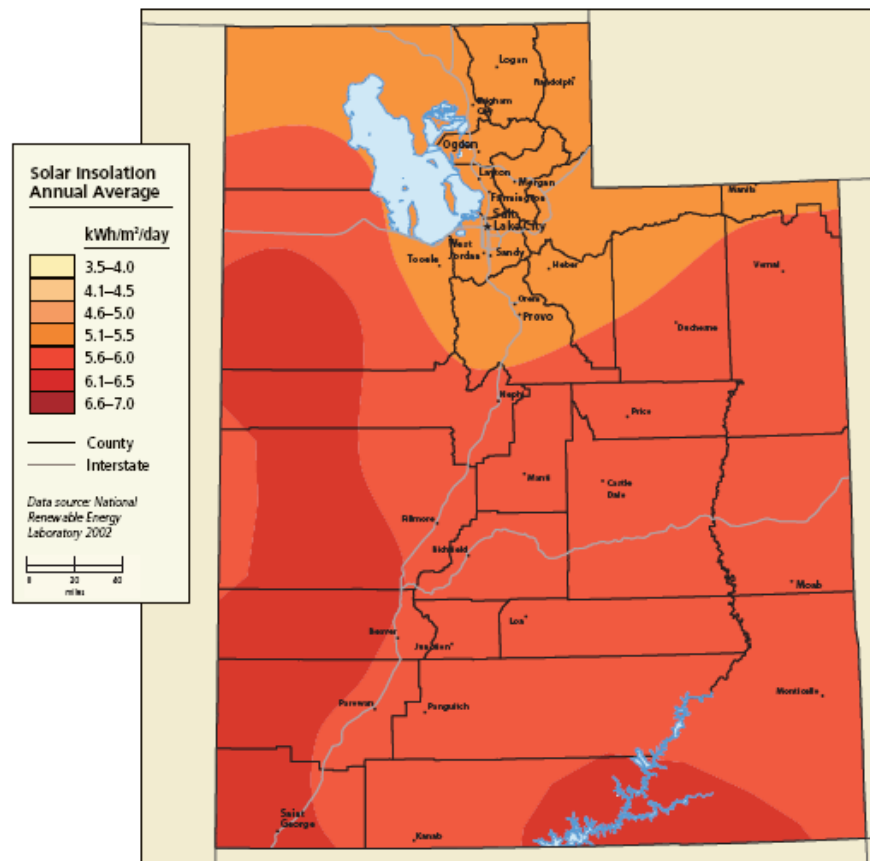
We urge the group to consider a solar requirement within the Utah RPS that grows to 2% of retail sales by 2020. To allay concerns of retail rate impact, a limit of 4% net retail rate impact is reasonable. Finally, the RPS needs the kind of enforcement incentives that arise from an alternative compliance payment, or ACP.

SunEdison strongly supports development and implementation of a RPS in Utah and believes that it can incorporate best practices of similar standards in surrounding states, placing Utah among the states leading the nation towards a sustainable energy future.

## Utah's Solar Resources

The state of Utah holds extraordinary solar resources, particularly in the southern half of the state. Based on information from the National Renewable Energy Laboratory (NREL), the potential energy production from solar resources is approximately 69 million MWh per year. The land mass required to meet that goal represents 0.5% of total land mass available, including all residential, commercial and industrial rooftops.

### Solar Energy Map of Utah



Residential solar installations currently cost \$7 to \$8 per watt, however increased experience will help bring down the cost to install as has been the case in Germany. Commercial installations are lower cost due to economies of scale. Customers of utilities are willing to invest their own capital in generating facilities that serve a portion of their own consumption for a variety of reasons – be it economic, environmental, or otherwise – thereby providing the general body of rate-payers effective access to low-cost capital from dispersed and diverse sources, factors which reduce overall risk and contribute to lower cost of capital overall and more optimal capital allocation. Furthermore, the cost of



photovoltaics (PV) is declining. First Solar recently announced panel prices below \$2 per Watt – roughly half of the current price of Si-based products.

Utah’s summer peak demand is growing at over 6% year. Solar electric resources can be utilized to address this growth, and mitigate future cost impacts.

### Renewable Portfolio Standards

Given that the southwest United States, and Utah in particular, is home to world class solar resources, energy policy development must address the solar resource. Each of the states adjacent to Utah that currently has a RPS in place has incorporated some type of requirement for solar resources.

State	CO	NM	AZ	NV
Solar/DG Requirement in 2020	0.8%	4.6%	3%	1%

There are four key policy areas required to capture solar electric resources.

Interconnection and net metering policies are two baseline practices that serve to level the playing field, that is, to remove barriers. It’s critical to adopt best practices policies in these areas, and the Commission has begun a process to address these policies. Third, [utility rates can also either promote or inhibit distributed solar resources](#). Smart rates can drive clean and efficient use of energy while making sure utilities are paid in full; bad ones can encourage sloppy use of energy. The final policy area is standards and incentives. All energy resources have incentives built into them – some have been around for a long time and some are relatively recent. Good incentive design can ramp the solar market up as spending is contained. At the moment, solar electricity cannot compete effectively with fossil fuel generation, which is heavily subsidized with tax credits, depletion and depreciation allowances, liability shields and other measures.

With the support of temporary incentives that enhance the economics and accelerate demand however, solar has the potential to compete against traditional resources today. This has been proven in several markets to in turn reduce costs over time through volume component manufacturing and the education of a local labor force in more efficient installation practices.

Different states have chosen different paths to stimulating their individual markets depending on local needs and interests. Some have chosen to rely exclusively on a renewable portfolio standard (RPS) to drive incentives for solar adoption. Others have chosen to provide direct incentives either through their state tax codes or through programs at regulated utilities. Still others have combined the two in creative ways that maximize the effectiveness of the effort while minimizing costs. The overall package of programs, practices and policies must work together to achieve certain fundamental principles:

*Build Enough Scale to Drive Investment.* Moving a solar industry into a state requires major investments in jobs, facilities, and inventory – investments that drive down cost. To make a successful program, incentives should support these investments – with at least 10 years of committed funding. All customer types should be able to participate in the solar market – from homes to commercial, industrial and government facilities. Small residential systems build participation and public support, while large systems drive large deployment numbers and low costs. A robust industry can only develop if there is a full range of system types supported – from small residential retrofits, new construction, and commercial rooftops, to large ground-mounted systems, and building-integrated photovoltaics (BIPV).

*Phase Out Incentives Over Time.* Solar costs have been declining, and all projections are for continuation of that trend (note the First Solar prices) – even as conventional energy prices go up. Incentives that phase out over time create strong competitive incentives for the industry while limiting the total price tag. As a side note here, we point out that extra credit multipliers for solar resources have not worked to encourage solar in any jurisdiction of which we are aware. Indeed, the New Mexico Public Regulation Commission just eliminated a 3 for 1 solar multiplier in favor of a diversity standard that requires a minimum of 20% of the RPS be derived from solar resources, and 1.5% to 3% from distributed renewable resources.

*Encourage High-Performing Systems.* Incentives should drive the industry to build the best systems it can at the lowest cost. Incentive programs should require quality installations and reward performance. This includes use of performance-based incentives (PBI) and other performance-based standards where feasible.

*Utilize Market Discipline.* A competitive, open and transparent market is required to develop the solar market for the good of all consumers. There should be a level playing field for all companies to promote price competition. Competitive procurement, especially for large systems, will result in most favorable pricing. Additionally, long-term, low-cost financing, which is available for conventional electricity projects, must be available for solar generating equipment.

*Program Administration.* Incentive programs should be simple, transparent, easy to understand and administer. Some states utilize a third party administrator, while others allow the utilities to administer the incentive programs. All stakeholders should have access to a program's data and status on a regular basis. The program must have adequate oversight and standards to protect public investment.

A single state agency should have responsibility for implementation of the RPS including the solar portion. Negotiation and coordination with organizations that have a stake in the deployment of PV systems and who actively support solar PV is critical. This includes solar advocacy groups, environmentalists, builders, utilities, companies, and all other interested organizations. For example, Public Service Company of Colorado (PSCo – the largest utility in the state) leverages its resources by partnering with the solar developers in the state. The developers (residential and commercial) find the customers, the utility provides the rebates, and once a month a meeting is held among the developers and the utility to review issues and challenges and ultimately to improve the program. As a result of this structure, the Company is well ahead of its solar targets.

Similarly, other aspects (such as program design, funding, reporting, etc) of the RPS can improve over time as state agencies, utilities and stakeholders gain experience. All parties should be prepared to build on success and replicate winning models.

## **Recommendations**

SunEdison again thanks the Utah Department of Environmental Quality for the opportunity to comment on the Renewable Energy Initiative. We look forward to doing business in the great state of Utah.

In sum, we make the following recommendations:

- Include a required solar component in the proposed RPS;
- Grow the solar component as a percentage of the overall RPS to reach 2% of retail sales by 2020 (e.g. 10% of a 20% RPS), roughly mid-pack in the region;
- Use performance-based incentives and competitive procurement to incorporate market discipline into solar resource acquisition;
- Incorporate a 4% retail rate impact limit; and
- Incorporate an alternative compliance payment as an enforcement measure.

Respectfully submitted this 11<sup>th</sup> day of September, 2007.



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**Utah Renewable Energy Initiative**  
**Additional Comments of SunEdison, LLC**  
**September 18, 2007**

**Introduction**

On September 11, SunEdison, LLC provided comments to the Utah Department of Environmental Quality (DEQ). On September 12, we had the opportunity to participate in the Renewable Energy Initiative (REI) meeting held at the Utah Department of Natural Resources providing us with a better picture of the ongoing REI process. As a result, we submit these additional thoughts for your review.

In our initial comments, we focused on the solar resource in Utah and how that resource could best be captured in a Renewable Portfolio Standard (RPS). In addition, we reviewed the four pillars of good solar policy including net metering, interconnection, rates, and incentives. In sum, we made the following RPS recommendations:

- Include a required solar component in the proposed RPS;
- Grow the solar component as a percentage of the overall RPS to reach 2% of retail sales by 2020 (e.g. 10% of a 20% RPS), roughly mid-pack in the region;
- Use performance-based incentives and competitive procurement to incorporate market discipline into solar resource acquisition;
- Incorporate a 4% retail rate impact limit; and
- Incorporate an alternative compliance payment as an enforcement measure.

In these comments we review other policies with potential to promote solar resources within Utah. To be clear however, all of SunEdison's projects have been installed in states with formal RPS policies. In addition, much of our work (and our offices outside of California) can be found in states with solar requirements *within* the RPS. States in which we have developed significant business that do not have a solar carve-out, generally have very strong financial incentives.

While financial incentives alone can drive a market, one must design such programs very carefully so as not to overheat the market which can lead to large amounts of solar, but at excessive prices. We believe in using market forces as much as possible to acquire *best cost* solar electric resources.

Following, we review packages of policies enacted in nearby states and show that there is a high level of inter-relatedness among policies adopted. We suggest that piecemeal adoption of individual policies without consideration of the larger picture may result in unintended outcomes.

We then review the solar marketplace in the U.S. in comparison with other countries, and show that developing positive policies towards solar electric resources today will pay economic dividends in the future.

## **Policy Packages**

Our initial comments and a significant portion of the discussion in the Renewable Energy Initiative meetings have been geared towards the RPS Strawman. We believe it's important to understand that the RPS is the most important policy directive, but does not always address the full spectrum of issues, barriers, and incentives often found in multiple pieces of legislation. In other words, while it may be helpful to look to other states as the basis for a piece of legislation, it is important to review related legislative initiatives in that state. In that way, the inter-relatedness of policies becomes evident and informative for policy development in Utah. For comparison purposes, we present the efforts of three Western states in the 2007 legislative session.

### *Oregon:*

- SB 838 created a RPS for large electric utilities of 25% by 2025, with interim steps of 5% by 2011, 15% by 2015, and 20% by 2020. Solar PV is an eligible resource but gets no special treatment in this bill.
- HB 2211 authorized a transferable Business Energy Tax Credit (BETC) up to 50% of the costs of a qualifying project, but not to exceed \$20 million. This bill is geared towards medium to large scale solar development.
- HB 2620 requires state or local governments to devote a minimum of 1.5% of the construction cost of a new building, or renovation of an existing building, to solar energy technologies if the building receives state funding.
- HB 3488 expands the property tax exemption for residential users of solar energy to businesses, including systems that can be used for net metering. This bill also allows the PUC to revise tariffs and rules to encourage IOUs to invest in renewable energy resources beyond what is provided by IOUs through the current public purpose charge.

In addition to these statutes, the Energy Trust of Oregon administers a three percent “public purposes charge” collected from utility customers. It is charged by the Oregon Public Utility Commission with investing in cost-effective energy conservation, helping to pay the above-market costs of renewable energy resources, and encouraging energy market transformation in Oregon. It provides grants to homes and businesses for customer-sited PV systems.

### *Colorado:*

- HB 1281 doubled the RPS in Colorado to 20% by 2020, and included cooperatives and municipal utilities (10% by 2020). The RPS includes a solar carve-out of 4%.
- HB 1279 provided an exemption from state sales tax for all renewable generation equipment.
- HB 1169 required cooperatives to adopt the interconnection rule incorporated into the RPS implementation rules of the PUC. These interconnection rules are considered “best practices.”

- SB 1150 established the Colorado Clean Energy Development Authority to leverage bond proceeds and provide government backed loan guarantees through a public authority.
- HB 1228 directed the PUC to develop incentives for the promotion of distributed generation (primarily solar) throughout the state, and report back to the legislature before the 2008 session begins.
- SB 91 established a task force to identify renewable resource generation development areas within Colorado that have “potential to support industry development among renewable energy developers for development of renewable resource generation projects.” These areas will be mapped to a GIS system with appropriate overlays including local utility policies that promote or inhibit solar resource development.
- SB 100 establishes energy resource zones to promote investment in transmission and allow for cost recovery by utilities for building transmission to rural resource zones.
- SB 246 establishes the clean energy fund to provide a steady funding source to the Governor’s Energy Office for the purposes of advancing energy efficiency and renewable energy throughout the state.
- SB 145 allows counties and municipalities to offer property or sales tax rebates or credits to residential and commercial property owners who install renewable energy systems on their property.

*New Mexico:*

- SB 418 doubled the Renewable Portfolio Standard to 20% by 2020 for IOUs and 10% by 2020 for cooperatives. This program supports distributed (rooftop) systems as well as utility-scale, and requires a diversity of resources.<sup>27</sup>
- HB 996 creates a gross receipts tax deduction for receipts from the sale and installation of solar energy systems.
- HB 188 creates the Renewable Energy Transmission Authority (RETA) a quasi-governmental agency, to facilitate the transmission and use of renewable energy, and requires that a minimum of 30 percent of the power transmitted over the new transmission lines comes from renewable sources.
- HB 996 creates a gross receipts tax deduction for receipts from the sale and installation of solar energy systems.
- SB 463 amends the existing renewable energy production credit with a new more expansive credit allowed for electricity produced by solar energy sources. The solar credit is phased in from \$.015 cents per kWh in year one to \$.040 in year six and then back down to \$.020 over the next four years. The solar credit is allowed for the first 200,000 MWh and for only ten years of qualified electricity generation. The Act also lowers the size of electric generating plant to 1 megawatt (MW) from the current 10 MW.

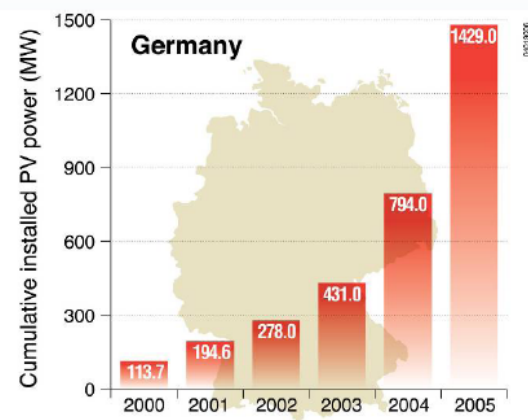
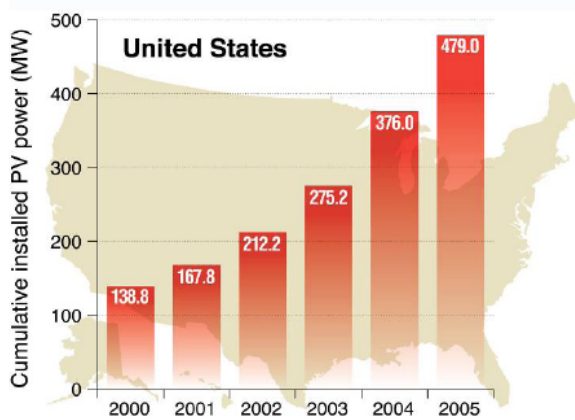
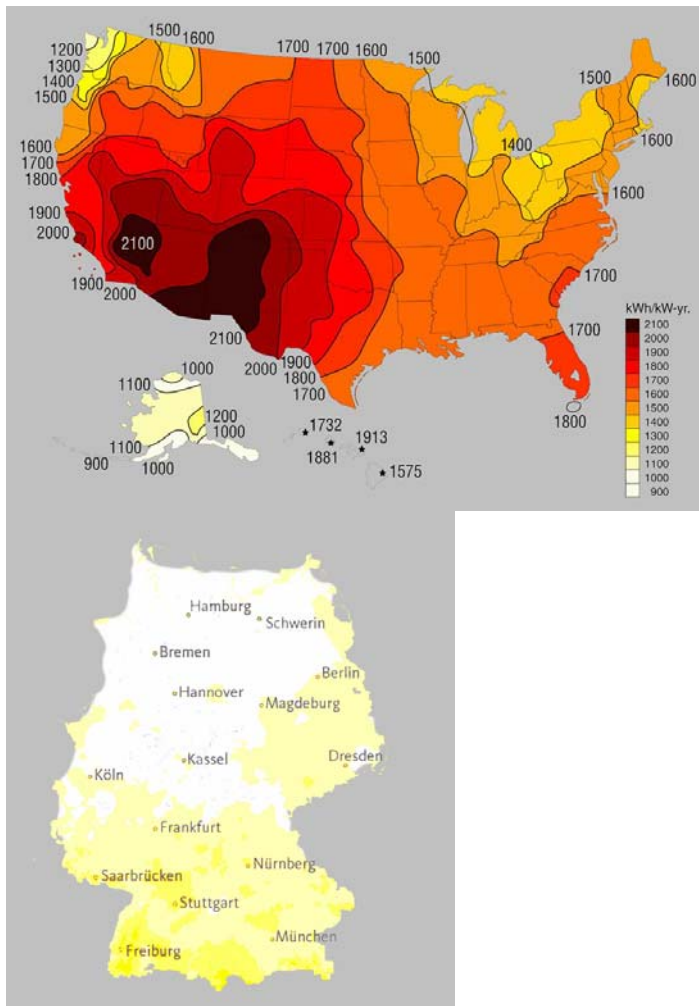
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<sup>27</sup> The New Mexico PRC has implemented a diversity rule to implement the statutory diversity requirement. It requires a minimum of 20% wind, 20% solar, 10% other, and 1.5% distributed generation by 2011.

Again, the point of these reviews is to show that RPS policies do not operate in a vacuum. In order to promote solar electric resources, an explicit solar component in the RPS is the most direct and effective mechanism. States with excellent solar resources (like Utah) in our region that utilize this policy directive include Arizona, Colorado, Nevada, and New Mexico. Even these states use additional incentives to encourage citizens to utilize solar resources. Other states, notably Oregon, do not include an explicit solar component, but rather use other financial incentives to allow solar to compete in the clean energy marketplace. Oregon's key incentive is the BETC, along with grant programs and effective net metering and interconnection policies..

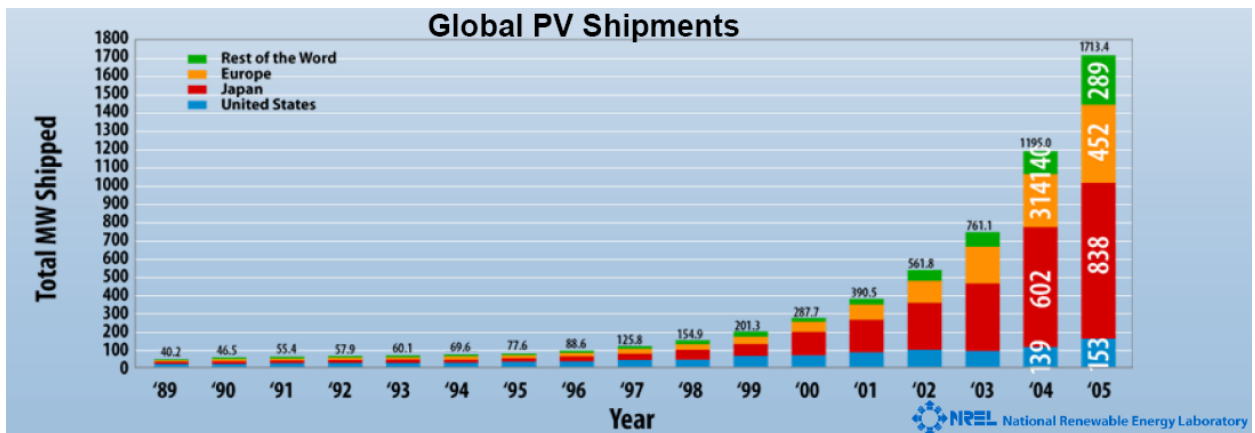
### **Why Solar and Why Now?**

The use of solar energy and PV in particular has been growing rapidly. However, the U.S. has been lagging other countries despite its vastly better solar resource. For example, Germany has been installing more than half of all the PV manufactured over the past few years, with Spain and Greece now beginning to follow its lead. The resources of the respective countries are depicted below.





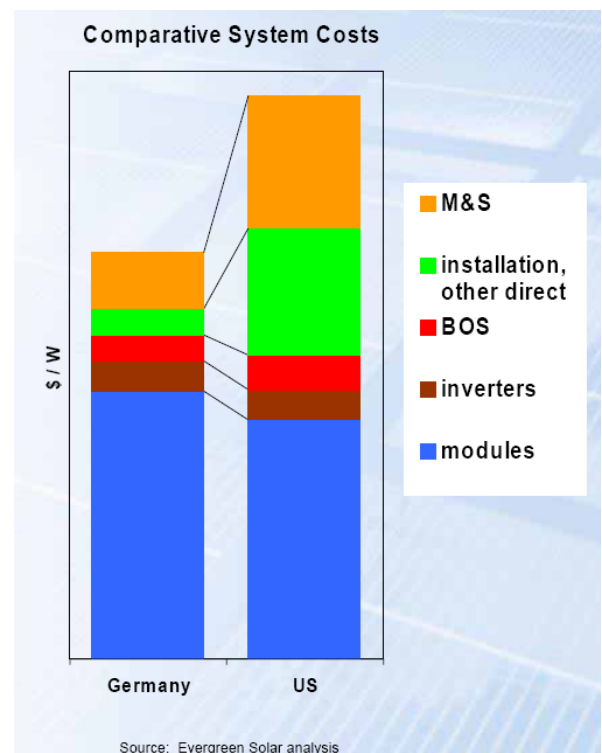
These realities have resulted in worldwide growth in the manufacturing of PV equipment, much of which has left the U.S. behind. Historically, the U.S. has been a technology leader, but without policies that promote the use of these resources domestically, the incentive is for corporations to locate their manufacturing and assembly facilities overseas. The following chart shows the results graphically.



Finally, despite higher hardware costs, German system costs are lower than comparable systems in the U.S. Nearly half of the total cost of installed PV is “local” including marketing, sales, installation, support, permitting, and financing. The take-home message is that global markets reduce hardware costs but local markets lower *local* costs.

In order for U.S. markets to improve efficiency of operations and installation, we must be able to build long-term businesses around stable and consistent policies and incentives at both the state and Federal level. Solar requirements within RPS policies, tax credits, and other incentives are all important ways to send these signals to the market.

Over time, such incentives should phase-out so that the industry has a known and consistent time frame within which it much reach long term viability. For Utah to capture the economic development benefits of the solar PV market, including manufacturing, assembly, and installation and support-related jobs, it must send appropriate signals to the marketplace. As a result, it will be able to capitalize on this great natural resource with which it has been blessed.



As noted in our earlier comments – all energy resources have incentives and policy supports built into them. Some have been around for a long time and are institutionalized. More recent examples are less so. Good incentive design can ramp the solar market up in Utah as spending is contained. Once again, SunEdison thanks the Utah Department of Environmental Quality for the opportunity to provide its thoughts and ideas in the Renewable Energy Initiative process. We look forward to constructive participation in future meetings to help Utah achieve its solar energy goals.

Respectfully submitted this 18<sup>th</sup> day of September, 2007.



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**Utah Association of Energy Users**

**COMMENTS ON A RENEWABLE PORTFOLIO STANDARD FOR  
UTAH**

**On Behalf of the Utah Association of Energy Users**

**Renewable Energy Initiative Task Force**

**September 11, 2007**

The Utah Association of Energy Users (UAE) appreciates this opportunity to make comments on the proceedings of the Renewable Energy Initiative's (REI) work on a possible Renewable Portfolio Standard (RPS) for the State of Utah.

With the information currently available UAE cannot determine if it supports an RPS for Utah. The most important issue that must be addressed, in order for UAE members to determine if they support an RPS, is how much the proposed RPS would cost customers: **WHAT IS THE REAL PRICE TAG?** As far as UAE is aware such a study has not been completed. Without knowing how a possible RPS will impact rates, UAE can neither

support nor oppose an RPS. UAE believes that it is essential for a rate impact study to be performed. As large industrial and commercial energy users, UAEs members spend a significant portion of their total operating expenses on electricity. It is integral for UAE members to understand how an RPS could impact the cost of electricity in Utah and how it will impact their business. With Utah's low cost of electricity and heavy reliance on coal generated power, an RPS for Utah could drive rates up substantially – greatly impacting Utah industries. UAE recommends that before an RPS is proposed a study is commissioned to look at how the standard would impact electricity rates in the State. UAE believes that a cost-cap is an essential piece of any RPS. A cost-cap can provide a degree of price certainty for customers. It is vital that the cost-cap be set to ensure the RPS does not harm the State's economy. A cost-cap must help keep Utah's energy prices low so Utah can continue to draw large industrial customers to the State and allow current industrial customers to continue operations in Utah. The rate impact study that UAE recommends should include an analysis of where an effective cost-cap would be set. UAE also supports a per meter cap, similar to the one implemented in Arizona's Environmental Portfolio Standard. In Arizona, the cap sets a monthly surcharge limit for the Environmental Portfolio Standard for residential, non-residential below 3,000 kW and above 3,000 kW. Such a cap would provide price certainty for all customers and should be tied to the cost-cap. UAE recommends that the State of Utah implement a per meter cost-cap for each rate class in addition to an overall cost-cap.

Alternative Compliance Payments (ACPs) are another important part of an effective RPS. ACPs give the ratepayer some certainty about electricity prices and help protect the ratepayer from price gauging in renewable energy markets. UAE supports the addition of an ACP mechanism to any proposed RPS in Utah. UAE believes that ACPs should be set aside in a fund which will be spent on future renewable energy resources or energy efficiency programs. This effective cap should be set by Public Service Commission of Utah (PSC). The ACP fund should also be overseen by the PSC. ACPs help reduce the amount of money put into uneconomical renewable projects and provide a cost cap for customers.

UAE supports the definition of renewables as defined by the REI. However, UAE would support expanding the definition to include other technologies that reduce CO<sub>2</sub> emissions such as combined heat and power applications and energy efficiency. UAE members support a broad range of "renewable energy" alternatives for a possible RPS in Utah. Green power programs such as Rocky Mountain Power's Blue Sky Program are for those customers who want to purchase renewable energy above and beyond the utility's requirements. As part of the Blue Sky Program the customer is purchasing Renewable Energy Credits (RECs). Because the customer is purchasing the RECs RMP immediately retires the RECs purchased on behalf of Blue-Sky customers. Therefore the Blue Sky RECs could not be counted toward a Utah RPS. The RECs purchased through Blue Sky allow the customer to claim the environmental attributes associated with renewable energy – such as a reduction in CO<sub>2</sub> emissions. If RECs from green power programs were counted toward the RPS, the RECs would be doubled counted – once for the RPS and once for the customer. If a customer chooses to pay more than the current electricity rates for renewable energy the customer should receive the benefits associated with that

purchase, i.e. the RECs. UAE has not been able to identify one state where green power purchases are counted toward an RPS; therefore, UAE recommends that green power purchases are not counted toward a Utah RPS. Green power purchases should be reserved for those customers who want to purchase renewable energy above and beyond the utility's obligations.

UAE supports flexibility in the RPS. The PSC should have oversight of the RPS and should be allowed to delay and/or modify the standard based on changing market conditions. This will enable the PSC to keep rates low for customers and allow Utah's economy to grow. UAE values the low cost of electricity in Utah – it allows many members to continue operations in the State. UAE supports measures which will help keep Utah's electricity prices among the lowest in the nation. That is why UAE believes before an RPS can be proposed a study must be performed to determine how such a measure would impact both electricity rates and Utah's economy.

## **Utah Associated Municipal Power Systems**

### **UAMPS Position Regarding Renewable Portfolio Standard**

September 20, 2007

We are grateful for the opportunity to participate in open discussions related to climate change issues. UAMPS and its members recognize the importance and need to be a part of a process which will recommend possible actions and solutions to climate change problems. It is our desire to make available and encourage member participation in the utilization of renewable resources as a possible remedy to climate change. Study and analysis of all practical renewable resources is current being undertaken by UAMPS. In addition, many members are independently evaluating renewable resource options on their own to ensure that no renewable opportunity is overlooked.

However, in reviewing all renewable energy options, it is evident the acquisition of these resources will drastically increase our member's power costs. As we consider moving toward adoption of a renewable portfolio standard by municipalities, the following must be considered:

1. Because of their non-profit nature Municipalities would face difficulty in passing increased costs of renewables to their consumers.
  1. Regulators of municipal electric systems are elected or appointed officials who themselves are system electric consumers charged with keeping electric rates as low as possible.

2. Because of the non-profit nature of municipal systems, municipalities cannot take advantage of incentives such as tax credits, accelerated depreciation and other cost crediting designed to encourage renewable development. Therefore, the full cost of renewable acquisition would immediately be born by municipal power consumers.
2. Most UAMPS members already have a portfolio that would contain in excess of 20% renewable resources, when older hydroelectric resources are included. UAMPS members strongly feel that older renewable resources should be counted toward achievement of any renewables target, because those older resources provide the same environmental benefit as new renewable resources built after some arbitrary date such as 1994.
3. UAMPS would like to make the following recommendations pertaining to an RPS for municipal electric systems:
  1. No regulation or review by the Public Service Commission.
  2. Reasonable RPS benchmarks and timetables could be recommended as targets for municipalities as long as they are voluntary. Due diligence tests of the targets may be considered as municipalities attempt to meet RPS goals. An economic impact “off ramp” might be substituted for voluntary compliance provision, but the voluntary provision is preferred over the economic off-ramp.
  3. All hydroelectric generation must be included in the determination of renewable resource, including pre 1994 and large projects.

### **Utah Municipal Power Agency**

#### **Utah Municipal Power Agency Position on Renewable Portfolio Standard September 16, 2007**

UMPA appreciates the open discussion and dialog regarding climate change issues. UMPA has always recognized the importance of and welcomed the benefits of an open process that will make meaningful recommendations for possible solutions and actions to address important issues. Renewable resources constitute a large share of our generation portfolio and we continue to analyze and study all practical renewable options. Near-term and long-term economic impact of resource acquisition decisions for our consumer-owners is an inescapable reality of utility ownership and operation. A

renewable portfolio standard will have economic impacts. Consideration must be given to:

1. UMPA is resource surplus to current load requirements. Our resource portfolio has been carefully acquired in past years to serve the near and long term growth of our member cities. UMPA has resources to meet our needs for several years. In addition, some future resources under development are at critical stages in their development to provide for future base-load needs. Any renewable portfolio standard would need to recognize prior prudent planning on our part for resources currently being developed.
2. Municipal utilities are self-regulated by elected and/or appointed officials who are part of the customer base. Part of their charge is to keep electric costs to consumers as low as possible. This governance structure needs to be recognized and preserved.
3. Cost recovery structures for municipal systems are based on well proven and accepted methods based on cash flow requirements and recognizing their consumer-owner nature. Certain practices unique to for-profit entities (accelerated depreciation, tax credits and other cost crediting methods) are not applicable, nor available, to municipal systems. Cost impacts of a renewable portfolio standard will be immediately felt by our consumers.
4. UMPA's renewable portfolio constitutes over 20% of member loads in FY 2007.

UMPA makes the following recommendations pertaining to any Renewable Portfolio Standard for municipal power systems:

1. No regulation or review by state agencies.
2. Voluntary participation by municipals to reasonable RPS timetables and benchmarks which would include an analysis of economic impacts of RPS.
3. Recognition of resource surplus status of some municipal entities. Don't recommend a policy that would require acquisition of a renewable resource if no resource is needed.

4. Recognition of all hydroelectric generation must be included in the determination of renewable resources.

### **Utah Clean Energy**



September 17, 2007

To: James Campbell, Department of Environmental Quality  
Ernie Wessman, Co-Chair Renewable Energy Initiative Focus Group  
Tim Wagner, Co-Chair Renewable Energy Initiative Focus Group

From: Sarah Wright, Utah Clean Energy

RE: Comments on Renewable Portfolio Standard Strawman Outline

Utah Clean Energy would like to respectfully submit our comments on the Renewable Portfolio Standard (RPS) Strawman Outline as part of the Renewable Energy Initiative Focus Group. Please direct any questions to Sarah Wright at (801) 363-4046 or [sarah@utahcleanenergy.org](mailto:sarah@utahcleanenergy.org).

Utah Clean Energy is supportive of an RPS policy in concert with state incentives for renewable energy. An RPS is an effective mechanism to advance renewable energy technologies, promote economic development across the state, attract new clean energy industries to the state, and diversify Utah's energy portfolio.

The utility market is highly regulated and Utah consumers do not have a "free-market" choice for their electricity product. An RPS policy is an effective means to drive diversity in the State's energy portfolio, offering consumers a more balanced, more sustainable, and less risky energy portfolio.

Utah Clean Energy supports the majority of the RPS Strawman Outline presented to the Renewable Energy Initiative Focus Group and would like to include the following suggested changes:

- 1) We would like to see the overall goal of the RPS to be 25% by 2025, with the same interim targets as the Oregon RPS.

- 2) We support a solar requirement within the Utah RPS that grows to 2% of retail sales by 2020; this is consistent with other state's efforts. Utah has an excellent solar resource that should be utilized to help meet Utah's burgeoning peak demand.
- 3) With regards to the definition of renewable energy, it is our position that large-scale hydroelectric should not be included in the RPS; the majority of state RPS policies do not include large-scale hydro, including the recently passed Oregon RPS and Washington RPS, where hydroelectricity is abundant. Since Oregon and Washington do not include large-scale hydroelectric in their RPS, it is conceivable that Utah's utilities could use large-scale hydroelectricity generation to satisfy the Utah RPS, thereby negating the intent of the RPS to diversify the existing portfolio and drive new renewable energy development.
- 4) We object to expanding the definition of renewables to include "low-carbon" resources. However, we would be supportive of a separate Energy Efficiency component in the policy.
- 5) We support the proposed requirements for Renewable Energy Credits (RECs) and the suggestion to allow unlimited unbundled RECs for in-state projects, as noted in the Strawman Outline.
- 6) We support the proposed cost-cap of four percent of a utility's annual revenue requirement in a compliance year. Another mechanism worth exploring to reduce the risk of compliance with the RPS is the California Market Price Referent (MPR), wherein the cost of a long-term renewable energy contract is tied to the market price (cents/kwh) of a combined cycle gas turbine facility, which is determined annually.<sup>28</sup> The MPR helps ensure cost recovery and simplifies the PSC approval process, while still tying the approach to a market referent.

Regarding the matter of transmission, it is our position that state transmission policies and regulations should be designed to facilitate the development of renewable energy technologies, allowing Utah to fully utilize and reap the benefits of the state's renewable energy resources.

In addition to an RPS, Utah Clean Energy supports state incentives to drive in-state renewable energy development and the associated economic development benefits. We will provide further comments at a later time, but initially we would like to recommend the following for consideration:

- Increase the production tax credit incentive for Utah-based wind and geothermal and consider larger incentives for community-scale or community-owned wind projects;
- Develop incentives for concentrating solar power;

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<http://www.cpuc.ca.gov/static/energy/electric/renewableenergy/qandas/marketprice/cereferent.htm>



- Remove the current tax credit cap for distributed renewable energy projects;
- Create a fund designed to cover a portion of the cost of geothermal drilling, whereby successful geothermal projects would repay the fund the amount they borrowed for drilling and replenish the fund for future use.

Thank you for consideration of these comments.

Respectfully,

Sarah Wright, Director

## **Utah Farm Bureau Federation**

### **Renewable Energy Mandates or Market Incentives?**

As Americans, we are eager to diversify our energy portfolio by integrating wind, sun, geothermal and bio-mass into our energy mix recognizing the environmental benefits. The Renewable Energy Initiative (REI) Focus Group, at the request of the BRAC, has spent numerous hours discussing and listening to presentations related to renewables. As with the climate change options presented by BRAC, there has been no economic analysis of the costs and benefits of a REI and economic impact to rate payers and Utah's businesses.

The philosophical debate currently centers on the role of government. Should there be a policy mandate to achieve a 10%, 20% or more level of renewable energy or should the government provide adequate time, a positive business environment and incentives? According to Richard Walji, president of Pacific Corp (Rocky Mountain Power parent company) population growth in Utah will require an additional 3,500 megawatts of electricity by 2016. Renewable technology is decades away from handling more than a small part of our energy needs and ultimately, being cost effective.

Renewables currently make up a very modest part of the U.S. electric generation portfolio. Renewables, excluding hydro, provide slightly less than three percent of the nation's energy needs. Of that, wind makes up around 90 percent of the electricity attributed to state renewable mandates. Would a Utah renewable mandate therefore be a wind mandate benefiting a specific industry sector?

Utah, the United States Congress and numerous other states are currently debating the wisdom of joining 23 others states and the District of Columbia in mandating a

percentage of our electricity from renewable resources. As we approach this debate something the Emperor Marcus Aurelius (AD 121-180) said has merit. “The object of life is not to be on the side of the majority, but to escape finding oneself in the ranks of the insane,” he observed.

Virtually every state to date that has implemented a renewable portfolio mandate has had relatively high retail electricity rates and a high potential for developing renewable energy. According to the Energy Information Administration, states with renewable portfolio standards in 2005 paid an average of 42 percent higher electric rates.

Utah’s Renewable Energy Initiative (REI) Focus Group is currently locked in a philosophical debate. Do we join 23 other states in mandating ten percent, twenty percent or even higher renewable portfolios or do we ask state government and policymakers to provide a favorable business climate and incentives to foster a market response?

Our natural resources allow Utahns to enjoy some of the nation’s lowest power rates. Any of the renewable options currently under consideration will be at a higher cost to rate payers. Our state is enjoying an economic surge. Business is attracted by a set of tangible and intangible assets. Quality of life and aesthetics in Utah are complemented by the seventh lowest power rates in the nation, powered by Utah’s abundant coal and natural gas.

Technology for capturing renewable energy, for the most part, is currently very expensive. While we recognize the need to broaden our energy portfolio, it must be cost effective. With the abundance of coal and other carbon based energy sources in Utah, incentives promoting clean coal technology seem to make sense.

Some argue that coal is a limited resource that is becoming more dangerous and difficult to harvest. Utah has an abundant supply of low sulfur, clean burning coal in the Kiaparowits Plateau which was placed off limits by the stroke of President Bill Clinton’s pen without input from Utahns or Congress. Rather than mining 2,000 feet below the surface, Utah coal could be harvested more safely 500-600 feet underground.

As Utah scientists and economists have looked at potential for renewable energy development, a number of issues surface.

Solar is Utah’s highest potential renewable opportunity, based on National Renewable Energy Laboratory (NREL) estimates, ranking us in the top five or six states. The technology exists to convert sun to energy, but it is extremely expensive. Utah has good potential for geothermal but drilling a well to harvest thermal energy can cost over \$1 million with no guarantee of success. Today, technology for capturing energy from wind is the most proven and cost effective, with a number of specific sites in Utah holding promise. NREL ranks Utah near the bottom in biomass opportunities.

Wind and solar energy capture are intermittent. A state renewable energy mandate will not only impact costs, it could jeopardize the economic viability of our current providers as well. Renewables can only contribute to the overall energy supply but do little to help power providers meet peak demand. Not many of us are willing to have electricity when the sun shines or the wind blows. A recent integration study for Utah estimating incorporating a 10-percent intermittent power supply increases the cost of the renewable power over its production cost by 4.5 to 5-cents per kilowatt hour.

Utah's geography and government land ownership (65% federal) provides a unique set of problems. The most cost effective harvest of solar energy is on flat landscapes requiring five-acres per of photovoltaic cells per megawatt. Utah's wind harvest opportunities are spread across the state, most far from transmission lines, and must compete with Wyoming Wind who arguably has some of the nation's most productive wind farms.

Integrating renewable power requires transmission lines that cost at least \$250,000 or more per mile depending on geography. Constraints include distance, terrain, national parks, recreational areas, wilderness areas, National Forest Service and Bureau of Land Management land use plans, endangered species habitat and road access to build and maintain power lines.

Then of course there is the not-in-my-backyard (NIMBY) issue. This sentiment makes it hard to site renewable energy facilities. Some of the landowners in Wyoming who contracted to install wind turbines are having second thoughts when they see their historic wide-open views impacted. Probably the most notorious NIMBY comes from the Commonwealth of Massachusetts. A 420 megawatt wind farm proposal in Cape Code Bay has been awaiting approval for six years. Will politics ultimately determine the value and outcome of a REI? It's interesting to note, United States Senate champion of environmental causes Massachusetts Senior Senator Ted Kennedy makes his home near the Bay.

As the debate continues on what Utah's role in reducing global greenhouse gases will be, it is important to consider the higher energy costs associated with a renewable portfolio mandate. How much will our citizens and economy have to pay?

Utah Farm Bureau Federation

## Utah Moms for Clean Air

Utah Moms for Clean Air  
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October 11, 2007

via email

James Campbell

Renewable Energy Initiative Focus Group

[jcampbell@utah.gov](mailto:jcampbell@utah.gov)

Dear Mr. Campbell:

With this letter, Utah Moms for Clean Air would like to respectfully submit our comments on the Renewable Portfolio Standard (RPS) strawman presented to the Renewable Energy Initiative Focus Group. Utah Moms for Clean Air is a non-profit, grassroots group of mothers and allies who share a concern about the health impacts of Utah's dirty air. Utah Moms for Clean Air strongly supports a state RPS policy as a means to facilitate a transition towards more effective use of clean, sustainable renewable energy and to reduce the impact on our airshed caused by highly polluting coal-fired power plants. We believe that an RPS policy combined with greater state incentives for efficiency and conservation will support our position calling for a moratorium on new coal-fired power plants. We also look forward to the other benefits an RPS policy would provide, namely the advancement of renewable energy technologies, the attraction of new clean energy industries to the state, and the much-needed diversification of Utah's energy portfolio.

The utility market in Utah is highly regulated and "free-market" choices are not truly available for renewable technologies. An RPS has been shown in other states to be an effective strategy to drive the development of renewable energy sources and provide more customer choice, thus pushing the market in a direction beneficial to public health, energy security, and diversified risk.

Utah has abundant potential for developing renewable natural resources that can be applied to providing our state's energy needs. We concur with the conclusions of the Union of Concerned Scientists who find that a national 20% RPS policy would generate \$26 billion of energy savings by 2025.<sup>29</sup> Even a very conservative study authored by the Energy Information Administration (EIA) 5 years ago, before the increase in oil prices, found that an RPS policy of 10% would have a negligible impact on electricity costs to the consumer (the consumer would actually see a slight savings).<sup>30</sup> In short, there is no reason *not* to implement an RPS policy in Utah.

We appreciate that the RPS strawman written by the Focus Group suggests moderate targets for our standard. We support as strenuous of targets as our energy market can achieve and recommend thorough economic analysis and reporting by the Focus Group, or some entity assigned by the task force.

Following are our comments on the specifics of the strawman proposal. We are continuing to review RPS policies in other states and look forward to working with the Focus Group further in the future.

- We are mindful of the hardships posed to municipal and rural electric co-ops by RPS, but we would encourage that the higher end of the proposed spectrum (10%) be adopted rather than 5%. We recommend that municipal facilities have standards for co-generation, as they are located in close proximity to their customers and co-generation increases efficiency and reduces pollution. We recommend that rural electric co-ops have standards for distributed power generation as transmission inefficiencies increase pollution and security risk. Standards for co-generation and distributed power generation should be created for municipalities and co-ops that would work in concert with RPS policies. We also hope that the Focus Group would consider including incentives for decentralized, community-based projects as is being done in Colorado.
- We are concerned with some of the definitions of “renewable” in the current strawman.
  - First, the definition of biomass is too broad and too vague. We note that incineration of biomass can contribute to pollution (for example, if agricultural products are laced with pesticides), and that biomass cannot be considered as clean as wind and solar. Biomass energy generation standards need to be written with air quality concerns in mind. Burning of animal wastes can have negative impacts on surrounding communities. Furthermore, large-scale use of biomass resources has the potential to generate incentives for undesirable land use and land management practices. We question the value of including biomass in the RPS standard and whether, especially as defined, it could constitute a source of “green power.”

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<sup>29</sup> “Renewing Where We Live,” Union of Concerned Scientists, August 2003.

<sup>30</sup> “Impacts of a 10-Percent Renewable Portfolio Standard,” Energy Information Administration, February 2002.

- Second, the hydroelectric power needs to be limited in this definition to include only small-scale hydro, and to be sure that it refers only to existing, and not any new, dams. Furthermore, we would submit that any hydroelectricity that is being considered pursuant to the RPS must be compliant with the recommendations of the World Commission on Dams.
- The language about “other resources as determined by the state-wide governing body” is problematic because it is too broad and has no qualifying language requiring public comment or input.
- The language in the comments about “low-carbon” in the context of renewables is problematic also, particularly if this language would be used to allow nuclear to count towards the RPS.
- Demand side management (DSM), plant efficiency, and end-use efficiency are very important topics and deserving of their own standards, but they are separate topics and should not be included in a Renewable Portfolio Standard. They are not renewable sources of energy in and of themselves.

The synergy of an RPS together with efficiency measures can be especially economically successful. However, by combining efficiency and renewable energy under one standard we risk undermining the renewable energy standard intent. On balance, renewable energy technologies have larger up front investment commitment than DSM, but renewable energy also generally provides longer term returns and has a longer installment life cycle.

We believe that efficiency standards are important and should be implemented and that there should be a strategy for promoting energy efficiency and demand management. However they should be addressed separately. If it is felt that it is simpler to implement efficiency and renewable energy standards in one standard, the standard must include a minimum renewable energy percentage.

Because both renewable energy and DSM are typically purchased with up-front capital but their benefits are achieved over time, a DSM investment that last 5 years, isn't the same as a renewable energy investment that lasts 30 years.

- Green Power programs are a useful intermediary solution for advancing the renewable energy market, but are no substitute for an RPS. The National Renewable Energy Laboratory (NREL) has shown that voluntary green power purchase programs only have a modest impact on overall renewable energy availability and cost and a strong RPS is needed to see the benefits we hope to see from renewables.
- The REC structure should encourage distributed power generation. Transmission of power from large generation facilities is a large source of inefficiency and pollution in Utah. By encouraging distributed generation through the RPS policy, we can reduce the polluting impact of power generation even further.

- We would like to see additional consideration of creating stronger incentives for solar development, considering its strong potential in Utah, including concentrating solar power.

Thank you for your time and consideration of our concerns. We appreciate the opportunity to participate. We look forward to working with the Renewable Energy Initiative Focus Group closely in the future to help shape Utah's energy future as we move away from polluting sources of energy and toward cleaner air for all of us.

Sincerely yours,

Travis Anna Harvey and Dana Clark

Co-founders, Utah Moms for Clean Air

### **Utah Rural Electric Association**

## **Renewable Portfolio Standard Observations**

September 18, 2007

The Renewable Energy Initiative (REI) group has spent numerous hours listening to presentations and discussing issues relevant to renewable energy. Responding specifically to the question of whether Utah should have a renewable portfolio standard (RPS), the Utah Rural Electric Association believes that an RPS mandate may be premature.

While the group has discussed issues associated with a RPS, given such a short time frame, approximately 2 months, no economic analysis of projected costs and benefits for Utah citizens or modeling of potential development opportunities, transmission constraints, etc., has been reviewed. Thus, from our perspective, a strong case has not been made for a RPS. Without this analysis to provide more structure for decision making, setting goals and benchmarks is capricious at best. Before proceeding with any type of RPS mandate we need a far better understanding of the realities of what the consumers will ultimately pay and the realistic benefits they can expect to receive.

California may provide an example of the consequence of moving towards a target without a thorough analysis of the costs. In *An Examination of Three Economic Assessments of California Climate Change Policy* by Robert N. Stavins, Judson Jaffe, and Todd Schatzki (January 2007) the authors find an underestimation on annual costs on

the order of billions of dollars resulting from the California Global Warming Solutions Act of 2006. Further, the May 2007 issue of *American Wind Power* magazine states “An unanticipated increase in wind capital costs over the past several years led to the establishment of cost assumptions markedly below the true capital costs.” Consequently, the report says, “the actual cost impacts of state RPS policies may significantly exceed those estimated and further rise if the cost of wind remains at current levels.”

The demand for electricity in Utah continues to grow. The reality is renewable energy and conservation cannot meet this demand. We should pursue appropriate investments in research and development to encourage these technologies; however, we must insure that our short and long term future energy needs are met with firm resources. To this end we believe the use of taxpayer and/or ratepayer funds on energy in a carbon constrained environment should be assessed in the context of all energy resources. We may find that capital might best be spent, or at least receive a higher percentage of investment dollars, for technology advancements in clean coal and nuclear energy versus proposals that may simply result in requests for citizens to “turn off the lights.”

If policy makers in Utah are absolutely determined to pursue a RPS without the advantage of an appropriate analysis, they should do so very cautiously, with sufficient consideration for the unique characteristics of Utah, the attributes of the various utility companies serving the state, and the impact to taxpayers/ratepayers.

Utah Rural Electric Association



## **Wasatch Wind**

Wasatch Wind, Inc

357 West 910 South  
Suite A  
Heber City, UT 84032  
(435) 657-2550

September 17, 2007

Dear James Campbell:

Wasatch Wind welcomes the opportunity to submit our comments on the Utah Renewable Portfolio Standard (RPS) to the Renewable Energy Initiative Focus Group. Wasatch Wind supports both a state initiated RPS policy and other state incentives for renewable energy. Renewable Portfolio Standards have been adopted by many states to promote renewable energy technologies, to diversify their energy portfolio, to reduce risks associated with future environmental legislation and other mandates and to promote economic development within their states. We recommend that Utah adopt a RPS this coming legislative session.

Wasatch Wind supports the RPS Strawman developed from the Oregon RPS model and request that the additional changes listed below be adopted by the Blue Ribbon Advisory Committee.

- 1) Wasatch Wind recommends that the overall goal of the RPS be increased to 25% by 2025, with the same interim targets as the Oregon RPS.
- 2) Wasatch Wind recommends that all existing large-scale hydroelectric facilities be excluded from the RPS and severe restrictions to new hydroelectric facilities be instituted before considered as part of the RPS. Hydroelectric facilities have their own unique detrimental impacts on the environment and should be excluded in all cases unless credible evidence is provided that the resource has little or no impact on the environment. This restriction is particularly important for Utah and other arid regions where water resources are scarce. Oregon and Washington have excluded large-scale hydroelectric from their RPS. The inclusion of these resources in a Utah RPS could have unintended consequences. For instance, Rocky Mountain Power (RMP) could use their large-scale hydroelectricity generation in the Northwest to satisfy the Utah RPS and negate the intent of the RPS to diversify the existing portfolio and drive new renewable energy development.

- 3) Wasatch Wind recommends that nuclear power not be included as a low carbon renewable resource. Nuclear power is not a renewable resource, and has its own set of issues that should be addressed separately.
- 4) Wasatch Wind supports a separate solar requirement within the Utah RPS that grows to 1% or 2% of retail sales by 2020. This will promote the development of Utah's excellent solar resource that can be leveraged to help meet Utah's exploding peak demand as well as diversify Utah's renewable portfolio.
- 5) Wasatch Wind supports the development of a separate Energy Efficiency component in the policy.
- 6) Wasatch Wind recommends that Renewable Energy Credits (RECs) purchased by Blue Sky participants be excluded from the RPS requirements. The inclusion of Blue Sky RECS in the RPS will undermine the incentives of current participants and could ultimately destroy this currently successful voluntary program.
- 7) Wasatch Wind supports the proposed cost-cap of four percent of a utility's annual revenue requirement in a compliance year. Another mechanism worth investigating is the California Market Price Referent where the rate of a new renewable energy project in cents/kWh is related to the increase in price over a combined cycle gas turbine facility.
- 8) Wasatch Wind believes that the RPS legislation should be designed to establish a competitive market for renewable resources in Utah. A level playing field that treats independent power producers, regulated utilities and municipal service providers equally will produce the best results and provide the lowest costs to Utah ratepayers. The major portion of the Utah electric market is controlled by PacifiCorp, dba, Rocky Mountain Power which in turn is regulated by the Utah Public Service Commission. The Commission's mandate is to promote the public interest by establishing fair and reasonable prices and terms and conditions of service. Rocky Mountain Power currently operates under Senate Bill 26 which states that all resource acquisitions over 100 MWs must be subject to a competitive bid via a RFP. The legislative intent of the bill was to provide a level playing field for all potential generators and thus the Company would be forced to acquire the least expensive resources. Yet PacifiCorp is currently in the process of acquiring two 99 MW wind facilities in Wyoming thus avoiding direct competition with independent producers. Review of the RFP size limit should be reevaluated.

- 9) Additional attention should be provided to smaller independent renewable energy projects to ensure fair and equal cost treatment by the regulatory system and to lower potential barriers to entry that have been inadvertently erected by regulatory policy. Resources that fail to meet the RFP 100 MW minimum requirement are left with few options, one being to sell power at the avoided cost rates. For example, Wasatch Wind is in the process of developing over 2500 MW of wind energy in Utah, however due to geographic constraints, more than 50% of these projects are in the 20 to 80 MW size. These small to mid size projects are ineligible to participate in the RFP process so the prevalent option is to sell power as a Qualifying Facility as determined by FERC at a rate determined by the Utah Public Service Commission. This rate is commonly referred to as avoided costs rates. The current method for determining avoided costs rates is the last executed contract from a renewable resource RFP issued by Rocky Mountain Power “RMP”. However because RMP is presently developing wind projects below the RFP minimum size limit, future RFP’s may be delayed or even negated. The excessive delay creates uncertainty for an independent developer that the last RFP may not reflect present true costs of wind projects. Stated another way, the current pricing method relies on the last executed wind contract from an RFP. These rates reflect projects that procured turbines about two years prior. Turbine prices have been increasing over the last four or five years and further price increases are expected. The current lag time to procure a wind turbine is approximately 18 to 24 months. With prices set based on historical costs, a current developer cannot get avoided cost prices that reflect adequate cost recover based on the present project costs. However the regulated utility can build its own resources below 100 MWs absent a competitive bid and can be assured cost recovery of its investment and is granted the opportunity to earn a fair return on the investment. This places the independent producer at a severe disadvantage.
- 10) Attention should be addressed to establishing fair and equivalent transmission access policies for projects below the 100 MW cutoffs. When a utility builds/buys projects or purchases power inside the RFP based competitive process their obligation is to evaluate trade offs regarding transmission access and generation allocation decisions. For example, the highest value wind projects may be those in areas where transmission is constrained. Since the utility is obligated to provide “least” cost power, they must determine from the RFP applicants if backing down coal plants or other generators to allow wind generated transmission access provides the lowest cost power. Unfortunately, the utility is under no obligation to back down power when a QF project requests transmission access. As one example, a QF wind IPP has little opportunity to access transmission in Wyoming for delivery to Utah yet RMP is able to deliver power from two 99 MW wind projects recently announced that avoid the competitive RFP process and are also able to deliver the power to Utah by backing down coal. We strongly argue that this situation is capricious, not in best rate payer interests, and should be corrected.

- 11) There are additional issues with the current method of determining avoided cost rates that places smaller projects at a disadvantage. The minimum size requirement for the renewable bid is approximately 70,000 MWHs. Thus a small facility of approximately less than 25 MWs is excluded from the RFP process. This should be corrected to eliminate this artificial barrier.
- 12) The REI should address the issue of establishing a mechanism to create incentives for renewable resource projects to be located in the state of Utah. This could be done with other incentives such as taxes credits or other mechanisms or it could be done directly with the RPS requirements. There could be a set aside for Utah projects such that some percentage of the RPS must come from Utah. This set aside is justified given the economic benefits in terms of employment and tax base that the state would inure.
- 13) Wasatch Wind recommends that the RPS recommend that the Public Service Commission review the procedures for disseminating information about transmission access and capacity availability of the regulated utility's transmission facilities. Availability of transmission from potential renewable resource sites to potential loads should be made accessible to the public so that independent renewable resource developers can evaluate potential sites within the state. Limiting transmission information only to network providers will discourage competitive entry of small renewable resource developers and will restrict the development of renewable resources within the state. Currently the only way to glean transmission availability is to submit either a Small or Large Generation Interconnection Request with at least a \$10k deposit and then have a scoping meeting with RMP to learn the capacity of the line. For small wind developers, hiring a consultant to assist with the technical requirements of the request, submitting the \$10k (some of which will be returned if the Interconnect Agreement doesn't get signed) to get a sense if there is ample transmission capacity is cumbersome and inefficient. Unfortunately, at this point it is the only option. In defense of RMP, they have stated that they would have a public meeting to discuss transmission availability, but they have admitted it is significant work and they are extremely busy and to be frank, they have little incentive to do this in a timely manner. Public reviews and complete dissemination of the network constraints should be required on a regulated update basis. In addition removal of the "network" customer requirement is suggested such that all IPP's can request reviews in private of transmission availability and impacts.

In addition to an RPS, Wasatch Wind supports additional state incentives to encourage in-state renewable energy development and associated economic development benefits.

We will provide further comments at a later time, but initially we would like to recommend the following for consideration:

- Increase and extend the production tax credit incentive for Utah-based wind and consider larger incentives for community-scale wind projects up to 20 MW and community-owned wind projects of any size.
- Remove the current tax credit cap for distributed renewable energy projects
- Create a fund similar to geothermal to cover a portion of the cost of wind prospecting and costs assessed by the utility for transmission availability studies whereby successful wind projects would repay the fund and replenish the fund for future use.
- Provide an incentive to Utah based manufacturers of renewable energy devices used in Utah renewable energy projects.
- Develop a self sufficient loan fund for projects less than 20 MW.
- Establish fair and reasonable costs for the standardized interconnection studies of the FERC mandated “Small Generation Interconnection Procedures” for projects no larger than 20 MW.

Thank you for consideration of these comments. Questions should be directed to Tracy Livingston at [tlivingston@wasatchwind.com](mailto:tlivingston@wasatchwind.com)

### **Western Resource Advocates**

### **WRA Comments to the Utah REI**

Western Resource Advocates (WRA) wishes to thank the various parties that supported and maintained the working group process that allow us to comment on the Utah Renewable Portfolio Standard (RPS). WRA was involved in the development of RPS programs in Arizona, Nevada, New Mexico, and Colorado, working with regional stakeholders to develop RPS programs unique to each state’s resources and economy.

We believe the RPS is a critical component to achieving the important goals established at the beginning of this process: (1) to increase fuel and power supply diversity, and (2) to reduce the output of CO<sub>2</sub> and the related climate change impacts. Through the IRP process, PacifiCorp (via its regional utility – Rocky Mountain Power) is already developing or planning to develop a fairly significant portfolio of wind resources. We

strongly support their efforts, but also note that there is significant opportunity to do more.

Generally, WRA supports the RPS structure as outlined in the Straw Man proposal utilized by the working group. Accordingly, we chose to only comment on certain items of concern.

#### **a) Target**

WRA supports the 20% by 2020 target for the IOUs. Given the long lead times associated with energy resource planning, we would also advocate a 25% target for 2025. Given the state's new commitment via the Western Climate Initiative, we believe the state and its utilities will need to invest on a sustained and aggressive renewable energy path to meet stated WCI-based objectives. Further, Utah joined other western states via the Western Governor's Association's Clean and Diverse Energy Advisory Committee (CDEAC) in a goal to develop 30,000 MW of new renewable energy supplies by 2015. Utah should consider these additional and aggressive goals when developing the RPS targets.

Importantly, the target should not be adopted as a goal, but rather a statutory requirement. A statutory requirement will actually protect the utility from unnecessary prudence considerations and more clearly define the risks in a RPS program. Also, the established targets should be based on retail sales, not nameplate capacity as fuel diversity and carbon mitigation is directly associated with energy production rather than capacity.

Regarding the municipalities and rural electric co-ops, we advocate for a goal of no less than 10% by 2020, but preferably at least 15% by 2020. All citizens share in the responsibility to combat global warming and the deleterious effects associated with this extraordinary problem. From more frequent and larger forest fires to longer cooling seasons and higher cooling bills to reduced snowpack and water availability, the impacts of climate change currently are, and will continue to be, felt by *all* citizens of Utah. Accordingly, we all need to invest in renewable energy to reduce our impact on the climate – and enjoy the benefits of fuel diversity and commodity price stability associated with renewable energy investments – regardless of whether our electricity is served by an investor-owned utility or a rural electric co-op. Although municipalities and rural co-ops frequently lack the staff and resources to develop new renewable energy facilities, existing organizational structures these entities belong to – and a liquid, well utilized Renewable Energy Credit (REC) market – will alleviate the need for the unilateral purchase of costly engineering and development skills.

In addition to the overall RPS target, WRA strongly encourages the development of a separate solar target, or carve-out. Solar energy, while currently expensive, holds extraordinary promise. Utah is blessed with extraordinary solar resources. A primary

goal in developing the RPS is fuel diversity. Given the current advantages wind resources hold over other renewable energy sources, wind resources will likely dominate the investments developed to meet the RPS targets. Accordingly, fuel diversity will only be modestly improved. Creation of a separate solar carve-out will further the fuel diversity goals, and will also push the solar market. That is, the increased demand for solar technologies and development and installation capability will have valuable impacts in reducing the cost and increasing the associated knowledge base over the long-term.

### **b) Alternative Compliance Payment**

The market for renewable energy credits (RECs) is currently in its infancy. Its evolution requires liquidity, *i.e.*, many buyers and sellers engaging in competitive arms-length transactions. WRA recognizes the concern of some members of the working group that the REC market may undergo periods of price volatility, leading to the purchase of high-priced RECs to meet the RPS requirement. Importantly, volatility is a critical facet of commodity markets – it sends a powerful signal that greater supply is required. All commodity markets whether it be for wheat, gold, oil, or pork bellies, go through periods of volatility and, while painful to certain market players, price volatility has a critical role in those markets, sending powerful financial signals through that economic sector.

The alternative compliance payment mechanism, while well-intentioned, will be counter-productive, and lead to reduced liquidity in the REC market. The short-term advantage of the alternative compliance payment (*i.e.*, reduced chance of volatility-based price increase) will be overshadowed by the long-term disadvantage of reduced investment in renewable energy facilities. Many states use the WREGIS system to track and trade RECs. Utah's use of the WREGIS system will increase the liquidity of that market and allow Utah utilities to meet the RPS requirements at lower cost.

Importantly, the Straw Man proposal already incorporates mechanisms to minimize the possibility of obligatory purchasing during episodes of volatility. Under the compliance section of the Straw Man proposal, the 2% 2 year window mechanism essentially eliminates the need for PacifiCorp to procure RECs during episodes of extreme volatility. Other states have implemented a banking mechanism whereby utilities are allowed to save RECs from a renewable energy investment and utilize these banked RECs as needed to meet the subsequent RPS requirements via a five-year window period. In fact, these mechanisms can be combined to provide the utility significant flexibility to meet the RPS targets.

WRA would encourage the working group to reject the alternative compliance payment mechanism, or at a minimum, advocate strong barriers to their use during only extraordinary circumstances (*e.g.*, if RECs exceed 3x the prior 12 month average).

Otherwise, the REC market will lose liquidity and value as critical trading mechanism as we proceed down the path of creating renewable energy markets.

### **c) Cost Effectiveness Analysis**

The manner in which renewable energy facilities are assessed for cost-effectiveness is very important. Throughout the country, with incentives from utilities, homeowners and businesses are making significant investments to distributed photovoltaic installations. While these investments have a very long payback, they are often a source of pride (and marketing) in reduced global impact and self-sufficiency. For example, customers of Public Service of Colorado (Xcel) are currently paying at least 40% of total costs to install PV systems, the remainder being picked up by Xcel as a direct subsidy or the transfer of RECs. Accordingly, the cost to the utility can be far less than the total cost.

Also, because solar facilities are producing coincident with peak requirements, they have very high capacity values. This needs to be properly considered when assessing the cost-effectiveness of solar investments.

### **d) Utility Green Power Programs**

WRA supports the concept of mandatory Green Power programs. All utilities, including municipalities and rural co-ops, should make available to its customers 100% Green Power options so that customers can elect to purchase renewable energy above and beyond the RPS simply and directly. Utility Green Power programs offer citizens a direct mechanism to limit their impact on the environment and support renewable energy technology.